



# REIMAGINING INNOVATION IN EDUCATION AND SOCIAL SCIENCES

Edited by

Wulan Patria Saroinsong, Muhamad Nurul Ashar,  
Irena Maureen, Lina Purwaning Hartanti, Mita Anggaryani  
and Audrey Gabriella Titaley



## REIMAGINING INNOVATION IN EDUCATION AND SOCIAL SCIENCES

Certainly, the pandemic has affected several aspects of life. Several modifications have been made and are now continuing. The number of innovations has expanded substantially, particularly in the fields of education and social sciences. Innovations are produced by educators, scientists, and professionals. These innovations must be distributed to aid the development of society in the sphere of education and beyond. After the eradication of the disease, we shall assist one another in conquering it and then develop and prosper together. This volume contains the works of educators, researchers, practitioners, and academics presenting the most recent research results, issues, and practical difficulties and solutions found in the domains of Education, Cultural Studies, Applied Linguistics, and Community Services. Reimagining is a creative method to approach or address challenges associated with innovation in the fields of education, cultural studies, applied linguistics, community services, or social sciences. Due to the topic areas covered in this proceeding, it is appropriate for instructors, researchers, practitioners, and academics who specialize in the aforementioned subjects.



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# Reimagining Innovation in Education and Social Sciences

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## Preface

The epidemic has surely influenced many elements of life. Several adjustments have been done and are ongoing at this time. Particularly in the sectors of education and social sciences, the number of inventions has increased dramatically. Teachers, scientists, and practitioners create innovations. These inventions must be disseminated to help the growth of society in the educational field and beyond. Once the epidemic has gone, we will support each other in overcoming it and then flourish and prosper together.

The International Joint Conference of Art and Humanities 2022 was organized by Universitas Negeri Surabaya (UNESA) – Indonesia as a platform for educators, researchers and those who care about education to share their ideas, findings, and stories relating to the innovation in education and social science. This prestigious event was coordinated and assisted by AIPI – the Artificial Intelligence and Scientific Publication Unit of UNESA and the Scientific Committee of the conference.

We would like to extend our appreciation to all keynote speakers and authors who generously contributed their expertise and experiences. We also want to thank all of the conference attendees who actively engaged in the discussions — we had attendees from Australia, China, Malaysia, Pakistan, the Philippines, Poland, Thailand, UK, and USA as well as fellow educators and researchers from Indonesia. This book is an effort to discuss and exhibit ideas and actions so that we could support each other to strive together in this ever-changing world after the pandemic.



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# Unraveling teachers of students with special needs experience during the pandemic

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**ABSTRACT:** This study will examine the experiences of teachers of students with special needs during the pandemic. The aspects to be studied include the psychological condition of teachers of students with special needs before and during the pandemic, teachers' perceptions toward students with special needs while learning during the pandemic, and the experience of teachers during the pandemic in providing online learning services for students with special needs. Data was collected using a closed survey with a purposive sampling method. A total of 293 teachers from special schools, inclusive schools, and integration schools filled out the survey. The results showed that many teachers of students with special needs experienced various negative emotions in carrying out their duties as teachers. Based on the teacher's perception, students with special needs also felt these negative emotions. Furthermore, teachers were ready to carry out online learning, although they still needed support in using technology.

## 1 INTRODUCTION

On January 30, 2020, the World Health Organization (WHO) declared COVID-19 a global emergency and a global pandemic on March 11, 2020. Currently, COVID-19 has affected 213 countries and regions [1]. In response to COVID-19, several countries have implemented strict social distancing measures and regional quarantine policies. Clearly, this pandemic has had a major impact on schools, students, and teachers. As of March 12, 2020, 46 countries on five different continents have declared nationwide school closures, [2]. This condition compelled schools to adapt to distance learning.

Changes in learning systems are forcing schools to implement distance education or online learning, e-learning, correspondence education, external studies, flexible learning, and massive open online courses (MOOCs). The same rules and regulations were applied in the United States, according to the Centers for Disease Control and Prevention [3]. Moreover, e-learning plans have been implemented accordingly, including digital and distance learning options, to ensure the continuity of education for students during the COVID-19 pandemic. Furthermore, a report by the World Bank [4] stated that due to the COVID-19 lockdown, several countries had implemented different learning systems; for example, in early February 2020, China implemented an online learning system by holding simultaneous online learning exercises to ensure student learning is not interrupted. In Bulgaria, in early April 2020, the Ministry of Education and Science launched an e-learning system. Due to school closures in Finland, instruction and mentoring for students have been implemented through distance learning, digital learning environments and solutions, and, where appropriate, self-directed learning. Several ways to support e-learning have been found, including creating an e-content repository, which publishes specialist pedagogical materials for working in e-learning environments.

These measures show that teachers of students with special needs show various responses and experience different challenges from one another. Previous research has attempted to reveal the experiences of teachers of students with special needs during the pandemic. Research by Yazcayir and Gurgur [13] on teachers in Türkiye showed that teachers had to adapt to the use of technology. Research by Parmigiani et al. [14] showed that many teachers in Italy faced various obstacles while teaching students with special needs during the pandemic, especially regarding the lack of skills in teaching students with special needs online. Research by Putri et al [15] also showed similar results where teachers had to make various adjustments in carrying out online learning.

## 2 RESEARCH OBJECTIVES

Based on the analysis of previous research, it can be concluded that there is still no research that comprehensively discusses the experiences of teachers of students with special needs during the pandemic. In particular, previous research examined the psychological condition of teachers during the pandemic and their perceptions of learning for students with special needs during the pandemic. Therefore, this study will comprehensively examine the experiences of teachers in special schools and inclusive schools. The aspects to be studied include:

1. Psychological conditions of teachers of students with special needs before and during the pandemic;
2. Teachers' perceptions of students with special needs while learning during the pandemic;
3. The experience of teachers during the pandemic in providing online learning services for students with special needs.

## 3 METHOD

This study applies a quantitative approach to determine the experiences of teachers of students with special needs during the pandemic. The data collection technique applied is a closed survey.

### 3.1 *Research subject*

The research subjects include teachers who teach students with special needs in class. The sampling technique uses *purposive sampling* where the sample has certain criteria, namely:

- 1) Teachers who teach students with special needs in their classes regardless of level.
- 2) Teachers who are capable of using technology.

Based on the results of data collection obtained from 103 teachers from special schools, 143 teachers from inclusive schools and 47 teachers from integration schools were included in the study.

### 3.2 *Data collection technique*

Data is collected through online surveys available via WA *broadcast*. The survey instrument generally contains the identity of the filler, general information, and three main parts of the survey which include:

- 1) The psychological conditions of teachers of students with special needs before and during the pandemic
- 2) Teachers' perceptions of students with special needs while learning during the pandemic.
- 3) Teachers' experience providing online learning services for students with special needs during the pandemic

### 3.3 Data analysis

The data collected will be analyzed quantitatively by evaluating the number and distribution of answers for each answer choice for each question, and calculating and interpreting the mean (M) and standard deviation (SD) for the answers to each question using SPSS.

## 4 RESULTS AND DISCUSSION

### 4.1 Respondent condition

The research was conducted in 2021. A total of 293 teachers from various schools in Indonesia filled out the survey that had been provided. The complete data is shown in Table 1.

Table 1. Distribution of respondents by gender.

	Gender	Frequency	Percentage
N = 293	Man	N = 88	30%
	Woman	N = 205	70%

Furthermore, based on the type of schools, such as inclusive, integration, and special schools, it was found that most teachers came from inclusive schools and the least from integrated schools (Table 2).

Table 2. Distribution of respondents by type of schools.

	Inclusive School	Integration School	Special School
N = 293	N = 143 49%	N = 47 16%	N = 103 35%

Most teachers were subject teachers, accounting for more than half of the respondents. Furthermore, other teachers, such as special education teachers and classroom teachers, dominated the number of respondents. The least frequent respondents were therapists and pedagogical therapists (Table 3).

Table 3. Distribution of respondents by role.

	Frequency	Percentage
<b>Early Childhood Education teacher</b>	N = 13	4%
<b>Subject Teacher</b>	N = 148	50.5%
<b>Support Teacher</b>	N = 13	4%
<b>Pedagogical therapist</b>	N = 2	1%
<b>School Counsellor</b>	N = 20	7%
<b>School Psychologist</b>	N = 1	0.5%
<b>therapist</b>	N = 0	0%
<b>Other teachers (Special Education Teachers, Class Teachers)</b>	N = 96	33%

Based on the distribution of working times as a teacher, it is known that the number of senior teachers dominates, followed by new teachers. There were no teachers who had worked for less than one year and were involved in filling out the questionnaire.

Table 4. Time distribution of working as a teacher.

Working time as a teacher	Frequency	Percentage
<b>Under 1 year</b>	N = 0	0%
<b>1–5 years</b>	N = 68	23%
<b>6–10 years</b>	N = 33	11%
<b>11–15 years old</b>	N = 50	17%
<b>16–20 years old</b>	N = 49	17%
<b>Over 20 years old</b>	N = 93	32%

Based on the respondent's data, it is known that most teachers teach students who have specific learning difficulties or autism, followed by students who experience mental retardation and learning setbacks. This is not surprising because most students in inclusive and special schools experience these barriers. The number of students who experience chronic diseases is very small because many children who experience these conditions do not receive formal education at school.

Table 5. Distribution of the types of students with special needs being taught.

Types of special needs	Frequency	Percentage
<b>Specific learning difficulties</b>	N = 165	20%
<b>Autism</b>	N = 160	19%
<b>Mentally disabled</b>	N = 90	11%
<b>Chronic disease</b>	N = 5	1%
<b>ADHD</b>	N = 75	9%
<b>quadriplegic</b>	N = 36	4%
<b>Lack of attention</b>	N = 20	2%
<b>Deaf</b>	N = 26	3%
<b>Coming from a different cultural background</b>	N = 35	4%
<b>Study setback</b>	N = 107	13%
<b>Blind</b>	N = 46	6%
<b>Special talent</b>	N = 35	4%
<b>Psychological trauma</b>	N = 28	4%

#### 4.2 Teacher's psychological condition during a pandemic

The COVID-19 pandemic certainly has an impact on several psychological aspects of teachers. It is known that 67% of teachers or teacher co-workers who were surveyed reported exposure to COVID-19. Additionally, 54% of students or people close to students have also been exposed to COVID-19. This data shows that the majority of respondents were directly affected by COVID-19. This condition then caused the entire learning process to be carried out through distance learning, as the percentage is shown in Table 6. This is in line with the regulations of the Ministry of Education and Cultures for the implementation of distance learning during the pandemic.

Table 6. Distance learning in Indonesia.

	Type of schools	Percentage
<b>Distance learning</b>	Inclusive School	97%
	Integration School	99%
	Special School	99%

Distance learning conditions certainly have an impact on the psychological aspects of teachers. This is indicated by the data from the questionnaire shown in Table 7, which shows that most of them are tired, nervous, sad, and stressed before and during the pandemic. Furthermore, during the pandemic, health conditions are also affected with more teachers feeling unwell than usual, and the teacher's level of calm is also reduced. This condition is consistent with research that shows teachers of students with special needs are more prone to experiencing negative emotions during the pandemic [11]. This is because there are still many teachers of students with special needs who struggle with distance learning [5]. Additionally, there is less time to collaborate and many teachers are overburdened with their work. This is supported by the results of previous studies which showed that teachers of students with special needs experienced vulnerability in completing their work [12].

Table 7. Teacher's psychological condition before and after the pandemic.

Statement	Before the pandemic, you felt		During the pandemic, you feel	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Tired	2.14	1.35	2.67	1.42
Flustered	1.31	1.77	1.81	1.35
Sad	1.57	1.23	2.41	1.46
Stress	1.62	1.36	2.40	1.54
Immersed in work	2.89	1.34	3.18	1.41
Calm	3.36	1.29	3.06	1.32
Think positively about the future	4.08	1.04	3.70	1.22
Not feeling well (headache/stomach ache)	1.83	1.16	2.15	1.29
Committed to helping others	4.07	1.04	3.95	1.06
Burn-out/overwhelmed with work	2.34	1.38	2.78	1.47

#### 4.3 Teacher's perception of students with special needs during the pandemic

Special education programs for students with special needs are carried out in two settings: special schools and inclusive schools. In Indonesia, based on the Strategic Plan of the Ministry of National Education in 2005, education for students with special needs can also be obtained through two available educational services: special school education services (SLB) and inclusive school education services. The main difference between special schools and inclusive schools is the diversity of students. Special schools only accept students with special needs based on expert diagnosis, whereas inclusive schools accept all students without exceptions. The teachers in special schools are mostly teachers who received some sort of special education in graduation, whereas teachers in inclusive schools are, of course, equipped with a background as classroom teachers or subject teachers. Even so, during the pandemic, both teachers with special education backgrounds and other teachers certainly experienced various.

Table 8. Results of teacher perception questionnaire for students with special needs.

Statement	Totally DON'T AGREE	DO NOT AGREE	NEUTRAL	AGREE	STRONGLY AGREE
The pandemic has a negative impact on the general feelings and behavior of students with special needs	5%	7%	15%	29%	44%
The pandemic has a negative impact on the performance of schools that have students with special needs	8%	11%	16%	30%	35%
The pandemic has a negative impact (in view of reduced meetings/interactions) on students with special needs, especially related to peer relations	2%	6%	12%	30%	50%
Online learning has a positive impact on the attendance of students with special needs at school.	19%	25%	25%	20%	11%
My students want to discuss the pandemic during the lesson.	9%	20%	30%	26%	15%
My students are worried that they or their relatives will fall ill.	6%	7%	26%	38%	23%
Online learning increases the gap in the knowledge level between students with special needs and regular students	5%	10%	17%	33%	35%
The pandemic has had a negative impact on how I feel in general.	8%	15%	24%	29%	24%
If I have a day off, I can consult with a psychologist/co-worker at school.	10%	14%	29%	29%	18%
The learning achievement of a student with special needs in an online learning setting depends on the active role of the parents.	2%	3%	9%	21%	65%

In general, the results of the questionnaire show that teachers have a perception that students with special needs experience a setback in the development of behavior and feelings (N = 44%) and relationships with peers (N = 50%). Furthermore, quite a lot of teachers believe that students with special needs are worried about the condition of their family members (N = 38%). Previous studies support these results, which show that there are separate challenges for teachers to provide learning for students with special needs during the pandemic [5].

In terms of learning, almost 68% of teachers agree and strongly agree that online learning has an impact on the gap in the resources mastered by regular students and students with special needs. This is in line with previous findings that online learning may hinder access to learning for some students [6], [7]; however, fewer students with special needs want to discuss the pandemic (N = 59). Furthermore, although learning takes place online, the attendance rate of students with special needs does not rise. This, of course, also has an impact on school performance, where almost 65% of teachers perceive that their school's performance has decreased in providing learning services for students with special needs during the pandemic. This is not surprising because previous research has also shown that teachers who teach students with special needs online are mostly found to struggle with online methods and technologies [14].

This condition encourages negative feelings, which are also experienced by almost 55% of teachers, but many of them are hesitant to consult with experts such as psychologists or colleagues. Furthermore, the majority of teachers agree and strongly agree (N = 86%) that learning for students with special needs must involve parents to proceed with the education effectively. This is supported by the results of a previous study by Putri et al., which conveyed the importance of collaboration with parents [15].

#### 4.4 *Teacher's experience during the pandemic period in providing online learning services for students with special needs*

During the pandemic, teachers have to make some adjustments to learning. The results of the study (Table 9) show that the use of technology must be included in learning during the pandemic for students with special needs [6], [7]. Following the online learning process, 65% of teachers are ready to proceed with online learning, whereas only 25% agree that online learning supports attractive and interactive learning because they have to adapt to the unique requirements and characteristics of each student with special needs [6], [7], and [8]. Most teachers adapt the methods, models, and teaching materials according to the needs and abilities of students (N = 61%). Many teachers experience stress with online learning methods (N = 63%), which is understandable considering that many teachers of students with

Table 9. Teacher experience questionnaire results during a pandemic.

Statement	Totally DON'T AGREE	DO NOT AGREE	NEUTRAL	AGREE	STRONGLY AGREE
Holding online classes is too stressful for me	5%	7%	15%	29%	44%
Less availability of technical support (computers, tablets, Internet access) for underprivileged teachers	7%	11%	16%	30%	36%
Teachers should be trained in computer programs used for online learning	2%	6%	12%	30%	50%
I am afraid that students will record me while teaching and post it on the Internet without my consent.	20%	25%	25%	19%	11%
My relationship with students' parents is now more intensive because of distance learning	9%	20%	30%	26%	15%
In a distance learning environment, I adapt my methods, models, teaching materials and materials to the needs and abilities of my students	6%	7%	26%	38%	23%
Online learning only brings benefits to teachers and students	5%	10%	17%	33%	35%
Online learning has enabled the dissemination of knowledge in a more engaging way	8%	15%	24%	29%	24%
The distance teaching activities conducted from my home had a negative impact on my family life	10%	14%	29%	29%	18%
I believe I am well prepared for online learning	2%	3%	9%	21%	65%



special needs in Indonesia have not mastered all the skills to teach students with special needs surrounded by online learning [5].

In terms of using technology to support learning, many teachers agree (N = 30%) and strongly agree (N = 36) that teachers need technical support in accessing technology. This is quite encouraging because most teachers of students with special needs in Indonesia recognized the need to learn technology. This condition is a good start for teachers in Indonesia so that they can be adept in carrying out online learning [9], [10]. Furthermore, 80% of teachers agree that training in computer programming is necessary to support online learning. This is indeed necessary, considering that all online learning must use technology [6], [7].

The impact of online learning is that teachers feel more confident in teaching in front of the camera, and very few teachers (11%) are afraid that the content delivered during learning is disseminated by students (11%). This is contrary to the results of research by Yazcayir and Gurgur which shows teachers of students with special needs adapt to carrying out online learning. Teachers (N = 61%) also feel that online learning is beneficial for both teachers and students. Furthermore, on average, teachers feel that the intensity of communication with parents has not changed significantly because of the pandemic, and online learning activities do not pose a negative impact on family life.

## 5 CONCLUSION

This study shows that many teachers of students with special needs experience various negative emotions in carrying out their duties as teachers. Based on the teacher's perception, negative emotions are also felt by students with special needs. Furthermore, teachers are ready to carry out online learning, although they still need support in using technology. Future research should be able to focus on examining the use of technology by teachers in teaching students with special needs.

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## Decision making in COVID-19: Students' cognitive styles and moods during post-pandemic times

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**ABSTRACT:** Being unwell can have an impact on your mental Health. It is usual to experience a lower mood after being through a significant event such as the coronavirus (COVID-19) pandemic. It can take a while to process what you have been through and the impact it poses and may still be having on your life. If you have not been able to do the activities you usually do, this can also significantly impact your mood. The present research aimed to investigate the impact of moods and cognitive styles on decision-making in post-pandemic COVID-19 among college students. Using the Purposive sampling technique, a cross-sectional survey design was used in which the sample size was 350 adults: females (n = 177) and males (n = 173). The age of the sample ranged from 18 to 25 years. Positive and Negative affect schedule scale (Watson & Clark 1988), Relational-Experiential Inventory Scale (Pacino & Epstein 1999), and Decision-Making Scale (Mann et al. 1997) were used to measure moods, cognitive style, and decision-making. Pearson correlation indicated a significant correlation among all study variables. Multiple regression analysis indicated that mood and cognitive style were significant predictors of decision-making. This study will help young adults to have positive moods to deal with life situations such as COVID-19 and groom up their cognitive style, which directly impacts decision-making.

### 1 INTRODUCTION

At the start of the 2020 calendar year, a new virus appeared, SARS-CoV-2, that spread so quickly over the globe. The World Health Organization soon referred to it as a pandemic (WHO 2020). Although global authorities appear to be concentrating on the infectious side of the pandemic, an increase in mental health disorders has been noted (Brooks et al. 2020; Holmes et al. 2020). The elderly, children, college students, lesbian, gay, bisexual, transgender people, homeless people, those in economic vulnerability, members of rural communities, immigrants, and psychiatric patients are among the categories that tend to be more susceptible to this type of mental health impact (Holmes et al. 2020; Khan et al. 2020;

Salerno et al. 2020; Wood et al. 2020). One of the main effects of COVID-19 was the global spread of SARS (Sim et al, 2004), MERS (Jeong et al. 2016), and Ebola (Betancourt et al. 2016), accompanied by a rise in the prevalence of depression and anxiety symptoms higher than that reported during previous pandemic events (Gong et al. 2021).

According to Chinese research by Gong et al. (2021), depression was found to be more severe than before the epidemic. These results complement the information from Australia, Wales, Italy, Libya, the United States, and Arabia (Bussone et al. 2020; Dawel et al. 2020; Elhadi et al. 2021; Gray et al. 2020; Khoshaim et al. 2020). College students are more susceptible to significant schedule adjustments and, consequently, to the psychological effects of the epidemic because universities have temporarily closed during this global health emergency (Khan et al. 2020). The impact of the pandemic on graduation has already been strongly linked to increased rates of depression (Duan L. et al. 2020).

Additionally, the functional impact of such cognitive symptoms is frequently severe, impairing people's capacities to work and carry out everyday tasks, increasing healthcare contacts, and hindering decision-making, communication, and social interactions (Davis et al. 2021; Ladds et al. 2020). Clinical psychologists and psychiatrists should be a part of the multidisciplinary team doing post-COVID therapy, according to UK clinical standards (Shah et al. 2021). It is important to note that the pandemic played a significant role in the worsening of the psychological conditions of people with pre-existing psychiatric conditions and other medical diseases, such as bipolar disorders and postpartum depression, as well as other medical diseases. In addition, it has been associated with a greater risk of the aforementioned symptoms. (Carmassi et al. 2020; Spinola et al. 2020). According to McFarland et al. (2003), happy persons are more likely to see the world through rose-colored glasses than people who are depressed.

They discovered that those in a happy mood thought individuals around them were happier and more talented than those in a negative mood, who tended to think less highly of others. They hypothesized that this mood congruency happens because people blame the targeted person for their bad mood rather than the actual cause of their bad post-pandemic mood. According to Leitch and Baumeister's (1996) theory, bad moods make it difficult to logically weigh the subjective value of potential outcomes, which may compromise one's ability to control oneself. They put this theory to the test by asking angry participants to rationally weigh their options before making a wager. These logical players had a considerably lower propensity to choose the risky, lucrative wager. The conclusion that bad moods result in illogical decisions is supported by the fact that dangerous behavior was curbed in these people. Bara and Klein (1993) made them feel down by asking participants to consider traumatic life events. They hypothesized that reliving these unpleasant past events would induce an autonomic reaction that people would perceive as anxiety. This earlier research led to the development of two convergent ideas about the impact of lousy mood on decision-making. First, a bad mood influences how valuable prospective outcomes are thought to be. In other words, people experiencing unpleasant emotions try to improve their mood by making decisions that have a good chance of providing them with significant reinforcement. An individual already in a bad mood has little to lose but plenty of potentials to grow, encouraging the deliberate choice of positive outcomes, even if they are dangerous. Second, people feeling down act impulsively and cannot control foolish impulses, neglecting to consider the long-term effects of their actions (Leitch & Baumeister 1996). Awareness, experience, reasoning, and judgment are all parts of the mental process known as cognition.

The study of cognitive processes has its roots in the Gestalt psychology of Wertheimer, Köhler, and Koffka, as well as in Jean Piaget's 19th-century research on children's cognitive development. In another study, Carl Jung proposed that personality consisted of three facets, each with a continuum description, in *Psychological Types* (1923), which was published around the turn of the 20th century. The first aspect, attitude, can range from extraversion—outgoing personalities—to introversion—inwardly oriented types. The second aspect, perception, is concerned with how a person interprets stimuli; whereas a sensory person is

detail-oriented and an intuitive person is meaning-oriented. The last aspect of personality is judgment, which concerns how someone makes judgments. A thinking person tends to be analytical and rational, whereas a feeling person tends to judge based on values. Individuals make decisions based on their preferences, values, and ambitions. Decision-making is the act of selecting two or more possibilities. According to research, a person's mood can influence the kind of decision they will make (Mayer et al. 1992). The phrase "mood congruency in judgment" was created to characterize circumstances in which a person's mood affects their thought, attributions, and expectancies, which in turn influences their conclusions. According to current theories about the relationship between affect and cognition, positive affect promotes assimilation into existing knowledge.

In contrast, negative affect promotes accommodation, which involves using bottom-up processing to take in new information with less consideration for what is already known (Bless & Fader 2006). Evidence suggests that being in a good mood makes people more likely to use schema and heuristics (Bodenhausen et al. 1994). Negative emotions constrict one's attentional focus, increase analytical processing, encourage irrational behavior, and enhance trust in methodical methods (Pham 2007). Mood, cognitive styles, and decision-making are all significant aspects of an individual's life. This study examined the impact of mood and cognitive styles on decision-making among college students during the post-pandemic. Mittal and Ross (1998) examined the positive and negative effects of mood and cognitive styles on strategic decision-making. They discovered that participants in a pleasant mood were less likely to take risks and more likely to perceive an uncertain strategic issue as an opportunity. Issue framing, when presented as a threat or opportunity, had a more significant impact on participants' understanding of the issue and willingness to take risks when they were in a bad mood than when they were in a good mood. Estrada, Isen, and Young (1997) found that positive affect caused internists to integrate information more quickly and to be less prone to anchoring compared to a control condition, even though both groups arrived at a diagnosis at the same time. Their study involved 44 physician internists making a diagnosis for a medical case. Forgas and George (2001) examined how affective priming and mood-congruency effects are by no means universal occurrences and, more broadly, how the context affects the influence of incidental moods on decision-making.

The amount to which emotions influence decision-making (and the impacts of mood congruency) relies on the information processing mode a decision-maker is in, according to Affect Infusion Model given by Forgas' (1995). Decision-making tendency is influenced by cognitive style. Their cognitive style impacts an individual's decision-making process since it involves information gathering, organization, processing, perceptions, and judgment. For instance, cognitive style influences the length of time spent gathering data, the types of information paid attention to, and the amount of data believed required for a thorough understanding of the issue when trying to gather information pertinent to making a choice (Vance et al. 2007). According to the study, 32% of adults admitted that they sometimes find it difficult to make simple decisions like what to wear or eat because they are so stressed about the coronavirus epidemic. When compared to other age groups (Gen Z adults: 37%, Gen Xers: 32%, Boomers: 14%, older adults: 3%), Millennials (48%) were more likely to struggle with this (APA 2021). As compared to a compartmentalized and detailed approach, a cognitive style will be linked to organizing and processing the learned material in a global, holistic method (Vance et al. 2007). The number of potential solutions developed to an issue and the number of options taken into consideration when making a decision are said to be partially influenced by cognitive style (Scott & Bruce 1995).

Additionally, the cognitive style has been linked to how quickly a final answer is adopted (Robey & Taggart 1989). As a result, individual differences in cognitive style ought to show up in people's decisions. The role of emotion, or affect more broadly, in decision-making has been studied in economics, the historically preeminent discipline for decision theory. The number of academic articles on emotion and decision-making doubled from 2004 to 2007 and again from 2007 to 2011. From 2001 to 2013, the proportion of these papers to total

scholarly publications on “decision making” (a rapidly expanding subject) grew by magnitude. Many psychologists today believe that emotions are, for better or worse, the primary force behind most important life decisions (e.g., Keltner et al. 2014; Keltner & Lerner 2010; Lazarus 1991; Loewenstein et al. 2001). Even when individuals do so unconsciously, decisions can be seen as a conduit through which emotions direct daily attempts to avoid bad feelings (like guilt and regret) and increase positive feelings (like pride and enjoyment) (Keltner & Lerner 2010). Similar to how actions can increase or decrease a good emotion, mental illness-related tendencies can be attributed to decisions. According to Frida (2009), “mood” is the appropriate term for upsetting circumstances about nothing in particular or about everything—about the entire universe. A mood is typically temporally detached from its origin, in contrast to feelings that typically accompany their inciting stimuli closely or instantaneously (Morris 1992). As a result, it might not always be simple to pinpoint the root of a mood. Mayer et al. (1992) were the first to use the term “mood congruency in judgments” to describe situations in which a person’s mood affects their ideas, attributions, and expectations, thus, affecting their conclusions. They contended that since great weather is consistent with people’s positive moods, happy people are more likely than depressed ones to expect nice weather for a picnic.

The main objective of the current study is to assimilate and extend the knowledge and insights gained from earlier research. In stressful situations such as the COVID-19 pandemic, unpleasant emotions are expected to increase while pleasant ones are likely to decrease, and little is known about the various gaps and their interrelationships. This study aimed to assess the effects of moods, cognitive styles, and decision-making among college students. Moods are significant phenomena among students that affect cognitive styles and decision-making. Moods and cognitive styles measure the intensity of decision-making in an individual. Considerable research has demonstrated that an individual’s mood can affect his or her decisions. The hypothesis that should be answered included: 1) H1. There would be a positive relationship between moods, cognitive styles, and decision-making; 2) H2. Moods and cognitive styles will significantly predict decision-making. 3) H3. There will be gender differences with regard to age, education, and residence concerning their moods, cognitive styles, and decision-making.

## 2 METHODS

### 2.1 *Participants and research design*

This study looked at how mood and the way people think affect the decision-making of college students. This study has been investigated through the descriptive and analytical methodology. The survey instrument adopted for this study was a questionnaire. For this study, a purposive sampling technique was used. Data was collected from November 2021 to February 2022. The sample comprised three hundred fifty (N=350) students from different colleges. The mood has been measured by negative and positive effect schedule scale (PANAS). The scale was developed by Watson and Clark (1988). It consists of 20 items. Ten items related to and ten items related to adverse effects. The response format ranged from “very” to “extremely). Literature reports the reliabilities of these areas; vivacious is .86 to .90, and negative is .84 to .87. The Rational Experiential Inventory (REI) Scale measured cognitive style, which was developed by Pacino and Epstein (1999). It consists of 40 items. Items are grouped into two dimensions—rational and experiential—which comprise two sub-dimensions—engagement and ability. Response formats range from 1= completely false to 5 = entirely true. Literature report reliabilities of subscales range from .75 to .86. Rational (.86 to .90), Rational Ability 10 items. Eighty-one to.83, and Rational Engagement 10 items from .78 to .82. Experiential 79 to.91, Experiential Ability 10 items .79, and Experiential Engagement 10 items .74 to.84. Decision Making was measured by the Decision Making

Scale developed by Mann, Paul Radford, and Ford. It consists of 31 items, i.e., vigilance 6 items, hypervigilance 5 items, defensive avoidance 5 items, buck-passing 5 items, procrastination 5 items, and rationalization 5 items. Response formats range from 2 = true for me to 0 = not valid for me.

Reliabilities of the subscale are vigilance at .80, hypervigilance at .74, Buck Passing at .87, and Procrastination at .81. To testify hypothesis, questionnaires have distributed the scale of mood, cognitive style, and decision-making among college students and give them a description of scales, that what are their perspectives and how to fill them with appropriate answer according to their condition. After distributing the questionnaire, they were told about informed consent and requested to fill out the questionnaire honestly. The data of the current study were analyzed with the SPSS-22 version (SPSS: statistical package for social sciences). Percentages and demographic characteristics of participants were examined, and alpha reliabilities were computed to ensure the psychometric strength of scales used in the study. A correlation matrix of all variables was computed to gain insight into the relationship pattern. Regression analysis was used for hypothesis testing. An independent sample t-test was performed in order to make a comparison based on demographic variables for these scales. Analysis was conducted using SPSS-22, and the following findings are shown in Table 1.

Table 1. Frequency and percentage of the sample (N = 350).

Sr.no	Variables	Categories	F (%)
1	Age	18–21	86.6
		22–25	13.4
2	Education	Intermediate	40.9
		Graduation	59.1
3	Sector	Govt	39.1
		Private	60.9
4	Residence	Urban	63.4
		Rural	36.6
5	Gender	Male	49.4
		Female	50.6

Table 1 shows the frequencies and percentages for the demographic characteristics of the sample in the present study.

Table 2 shows the correlation among study variables. The finding indicates that PANAS has a significant correlation with PANAS positive (PANASP) ( $r = .65, p < .001$ ), PANAS negative (PANASN) ( $r = .65, p < .001$ ), REIS ( $r = .33, p < .001$ ), REISA ( $r = .21, p < .001$ ), REISER ( $r = .30, p < .001$ ), REIEA ( $r = .15, p < .001$ ), REIEE ( $r = .24, p < .001$ ), correlates with DMS ( $r = -.01, p > 0.05$ ), with DMSV is significant ( $r = .11, p < .01$ ), with DMSHV ( $r = -.06, p > 0.05$ ), DMSDA ( $r = .02, p > 0.05$ ), DMSBP ( $r = -.068, p > 0.05$ ), DMSP ( $r = .46, p > 0.05$ ) and DMSR ( $r = -.087, p > 0.05$ ). PANASP has correlation with PANASN ( $r = -.14, p < .001$ ), significant with REIS ( $r = .28, p < .001$ ), REISRA ( $r = .23, p < .001$ ), REISER ( $r = .34, p < .001$ ), REIEA ( $r = .03, p > 0.05$ ), REIEE ( $r = .18, p < .001$ ) with DMS ( $r = -.06, p > 0.05$ ), DMSV ( $r = .25, p > 0.05$ ), DMSHV ( $r = -.02, p > 0.05$ ), DMSDA ( $r = -.16, p < .001$ ), DMSP ( $r = -.05, p > 0.05$ ), DMSR ( $r = -.08, p > 0.05$ ). PANASN has significant correlation with REIS ( $r = .14, p < .001$ ); correlation with REIRA ( $r = .04, p > 0.05$ ), REIRE ( $r = .05, p > 0.05$ ); correlation with REIEA ( $r = .16, p < .001$ ), REIEE ( $r = .13, p < .001$ ); positive correlation with DMS ( $r = .04, p > 0.05$ ), with DMSV ( $r = -.10, p > 0.05$ ), DMSHV ( $r = -.06, p > 0.05$ ); significant correlation with DMSDA ( $r = .13, p < .01$ ); positive correlation with DMSBP ( $r = .07, p > 0.05$ ); significant correlation with DMSP ( $r = .11, p < .01$ ); correlation with DMSR ( $r = -.02, p > 0.05$ ).

Table 2. Descriptive statistics alpha reliability and correlation (N = 350).

Variables	M	SD	$\alpha$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PANAS	57.68	9.33	0.61		.65***	.65***	.33***	.21***	.30***	.15	.24***	-.01	.11*	-.06	.02	-.68	.46	-.87
PANASP	33.53	7.12	0.71			-.14**	.28**	.23***	.34***	.03	.18***	-.06	.25	-.02	-.16**	-.16**	-.05	-.08
PANASN	24.14	7.16	0.71				.14**	.04	.05	.16**	.13*	.04	-.10	-.06	.13*	.07	.11*	-.02
REIS	130.40	12.07	0.65					.69***	.65***	.70***	.73***	.08	-.10*	.10*	.01	-.05	.01	.12*
REISRA	32.58	3.89	0.21						.30***	.35***	.34***	.09	.11*	.11*	.01	-.05	.01	.12*
REISRE	32.47	4.42	0.31							.24***	.25***	.06	.09	.07	-.03	-.10*	.06	.14**
REIEA	32.25	4.32	0.37								.37***	.12*	-.03	.1	.1	.11*	.04	.11*
REIEE	33.09	4.69	0.42									-.03	.11	.02	-.03	-.12*	-.07	-.02
DMS	33.24	6.77	0.66										.25***	.52***	.64***	.63***	.64***	.61***
DMSV	8.38	2.31	0.52											.19***	-.21***	-.17**	-.07	.05
DMSHV	5.87	1.70	0.19												.14**	.11*	.16**	.25***
DMSDA	4.61	2.10	0.43													.47***	.40***	.30***
DMSBP	3.90	2.33	0.59														.35***	.25***
DMSP	4.91	2.06	0.47															.27***
DMSR	5.54	1.83	0.27															

*Note:* Panas = positive and negative affect scales; PANASP = panas positive; PANASN = panas negative; REIS = rational, experiential inventory scale; REISRA = rational experiential inventory scale analytical ability; REISRE = rational engagement; REIEA = experiential ability; REIEE = experiential engagement; DMS = decision-making scale; DMSV = Vigilance; DMSHV = hypervigilance; DMSDA = defensive avoidance; DMSBP = buck passing; DMSP = procrastination; DMSR = rationalization.  $p^* < .05$ ,  $p^{**} < .01$ ,  $p^{***} < .001$ .



Table 3. Multiple regression for moods, cognitive styles, and decision-making during post-pandemic.

Variables	DM			DMV			DMHV			DMDA			DMBP			DMP			DMR		
	$\beta$	$\Delta R^2$	F	$\beta$	$\Delta R^2$	F	$\beta$	$\Delta R^2$	F	$\beta$	$\Delta R^2$	F	$\beta$	$\Delta R^2$	F	$\beta$	$\Delta R^2$	F	$\beta$	$\Delta R^2$	F
PANAS	-.01	.00	.06	.12*	.01	4.89	-.06	.00	1.33	-.02	.00	-.17	-.07	.00	1.62	.04	.00	.74	-.08	.00	2.62
PANASP	-.06	.00	1.42	.26***	.06	24.68	-.02	.00	.14	-.16**	.03	9.66	-.17	.03	10.01	-.05	.00	1.03	-.08	.00	2.51
PANASA	.04	.00	.71	-.10*	.01	3.71	-.06	.00	1.27	.13*	.02	6.36	.08	.00	2.12	.11*	.01	4.59	-.03	.00	.28
REI	.08	.00	2.59	.11*	.01	3.97	.11*	.01	4.17	.01	.00	.08	-.06	.00	1.20	.09	.00	.11	.12*	.01	5.18
REIRA	.09	.01	3.34	.12*	.01	4.83	.11*	.01	4.28	.02	.00	.08	-.03	.00	.44	.02	.00	.21	.11*	.01	4.25
REIE	.09*	.01	3.34	.12*	.01	4.83	.11*	.01	4.28	.01	.00	.08	-.03	.00	.44	.02	.00	.21	.11*	.01	4.25
REIEA	.13*	.02	5.73	-.03	.00	.37	.10*	.01	3.48	.10*	.01	3.59	.11*	.01	4.26	.04	.00	.59	.19*	.01	4.94
REIEE	-.03	.00	.42	.12*	.01	4.97	.02	.00	.24	-.03	.00	.43	-.12*	.01	5.07	-.07	.00	1.90	-.02	.00	.24

Note: PANAS = Positive and negative affect scale; PANASP = PANAS positive; PANASN = PANAS negative; REI = rational, experiential inventory scale; REISRA = rational experiential inventory scale analytical ability; REIE = rational engagement; REIEA = experiential ability; REIEE = experiential engagement; DM = decision-making scale; DMV = vigilance; DMHV = hypervigilance; DMDA = defensive avoidance; DMBP = buck passing; DMP = procrastination; DMSR = rationalization.  $p^* < .05$ ,  $p^{**} < .01$ ,  $p^{***} < .001$ .

Results show multiple linear regression analysis with PANAS, PANASP, PANASN, REI, REI, REI, and REIEE as the predictor variables and decision-making vigilance as the outcome variable. The results are significant for PANAS as a predictor ( $\beta = .11$ ,  $R^2 = .01$ ,  $F = 4.89$ ,  $p > .05$ ). The results are significant for REIEE as a predictor ( $\beta = .12$ ,  $R^2 = .01$ ,  $F = 4.97$ ,  $p > .05$ ). The value of .01 indicates that the REIEE can account for a 1% variance in decision-making. The finding indicates that REIEE is a significant predictor of Vigilance. Results are also significant for REI as a predictor ( $\beta = .11$ ,  $R^2 = .01$ ,  $F = 4.17$ ,  $p > .05$ ). The value of .01 indicates that the REI can account for a 1% variance in hyper-vigilance decision-making. The finding indicates that REI is a significant predictor of hyper-vigilance. The results are significant for REIRA as a predictor ( $\beta = .11$ ,  $R^2 = .01$ ,  $F = 4.28$ ,  $p > .05$ ). The value of .01 indicates that the REIRA can account for a 1% variance in hyper-vigilance decision-making. The results are significant for REIE as a predictor ( $\beta = .11$ ,  $R^2 = .01$ ,  $F = 4.28$ ,  $p > .05$ ). The value of .01 indicates that the REIE can account for a 1% variance in hyper-vigilance decision-making.

The finding indicates that REIE is a significant predictor of rationalization. The results are significant for REIEA as a predictor ( $\beta = .19$ ,  $R^2 = .01$ ,  $F = 4.94$ ,  $p > .05$ ). The value of .01 indicates that the REIEA can account for a 1% variance in rationalization decision-making. The finding indicates that REIEA is a significant predictor of rationalization.

Likewise, results are significant for REIA as a predictor ( $\beta = .11$ ,  $R^2 = .01$ ,  $F = 4.26$ ,  $p > .05$ ). The value of .01 indicates that the REIA can account for a 1% variance in buck-passing decision-making. The finding indicates that REIA is a significant predictor of buck-passing. The results are significant for REIEE as a predictor ( $\beta = -.12$ ,  $R^2 = .01$ ,  $F = 5.07$ ,  $p > .05$ ). The finding indicates that REIEE is a significant predictor of buck-passing, and the value of .01 indicates that the REIEE can account for a 1% variance in buck-passing decision-making. The results are significant for PANACEA as a predictor ( $\beta = .11$ ,  $R^2 = .01$ ,  $F = 4.59$ ,  $p > .05$ ). The value of .01 indicates that PANACEA can account for a 1% variance in procrastination decision-making. The finding indicates that Panasa is a significant predictor of procrastination. Furthermore, results are significant for REIRA as a predictor ( $\beta = .11$ ,  $R^2 = .01$ ,  $F = 4.25$ ,  $p > .05$ ). The value of .01 indicates that the REIRA can account for a 1% variance in rationalization decision-making.

The finding further indicates that results are also significant for PANASP as a predictor ( $\beta = -.16$ ,  $R^2 = .03$ ,  $F = 9.66$ ,  $p > .01$ ). The value of .03 indicates that the PANASP can account for a 3% variance in defensive avoidance decision-making. The finding indicates that PANASP is a significant predictor of defensive avoidance. The results are significant for PANASA as a predictor ( $\beta = .13$ ,  $R^2 = .02$ ,  $F = 6.36$ ,  $p > .05$ ). The value of .02 indicates that the PANASA can account for a 2% variance in defensive avoidance decision-making. The finding indicates that PANASA is a significant predictor of defensive avoidance.

### 3 RESULTS AND DISCUSSION

The present study aimed to investigate the impact of mood and cognitive styles on decision-making among college students. Mood and cognitive styles were supposed to be positively associated with decision-making. SPSS was used for data analysis. Psychometric properties of all three scales, i.e., mood, cognitive style, and decision-making scales, were computed on the sample ( $N=350$ ). In order to assess the relationship between study variables, correlational analysis was used. Psychometric properties of all three scales were computed on the sample ( $N=350$ ) and revealed that all the scales had significant moderate-to-satisfactory reliability and were harsh measures for the present study and objectives. To reassure the internal consistencies for all scales, alpha reliability was computed, which found satisfactory reliability of scales and sub-scales (Table no. 2).

The findings support the hypothesis. These various studies support the hypothesis. Thought and emotions also influence the depth of information processing related to

decision-making. A study on 122 students from the age group of 18–29 was conducted by (Arbol et al. 2021) to check the COVID-19 lockdown impact on young students and dispositional components were evaluated at the start of the study and validated questionnaires and scales were used to collect psychological adjustment measures (such as anxiety, depression, and self-perceived Health) for three evaluation stages. According to them, after one week of lockdown, anxiety and despair scores considerably grew, reaching a plateau pattern during the second week, whereas self-reported levels of energy, mental health, and quality of life displayed a pattern of steady progressive decline, with a more pronounced decline during the first week (Arbol et al. 2021). Indeed, numerous studies have demonstrated that people's moods can influence the kinds of decisions they will make. They also showed that people in positive (negative) affective states were more (less) influenced by heuristic cues, such as the expertise, attractiveness, or likeability of the source, and by the length rather than the quality of the message. The phrase "mood congruency in judgments" was first used by Mayer, Gauche, Braverman, and Evans in 1992 to refer to circumstances in which a person's mood influences their ideas, attributions, and expectancies, which in turn affect their conclusions. According to Phelps (2006), understanding the function and significance of emotion is essential to comprehending cognition. He conducted a study that also looked at the links between emotions and cognition. It has become apparent that emotion not only influences cognition but also plays a crucial role in functionality of our brains. Dual processing theories of cognition, which contend that two concurrent processes support decision-making, dominate contemporary models (Buck 1999). Rapid pattern recognition in system one produces emotionally charged biases, which in turn activate behavioral repertoires that have been stored. This nonconscious process has significant similarities to perceptual processes and is connected to intuitive decision-making (Dane & Pratt 2007).

The second hypothesis shows that mood and cognitive styles significantly predict decision-making. Results suggest that mood significantly impacts decision-making (Table no. 3)—a hypothesis supported by the finding. Previous researchers also show the relation between them; research has demonstrated that an individual's mood can affect his or her decisions. The phrase "mood congruence in judgments" was first used by Mayer, Gaschke, Braverman, and Evans (1992) to characterize circumstances in which a person's mood has an impact on their ideas, attributions, and expectancy, which in turn have an impact on their conclusions. They contend that since great weather is consistent with people's positive moods, happy people are likelier than sad ones to expect nice weather for a picnic. Leitch and Baumeister (1996) conducted a series of tests to demonstrate how negative emotions influence bad decisions. In an experiment where individuals were asked to write autobiographical stories, researchers discovered that people were more likely to recall past experiences when unfavorable emotions followed riskier options. In a different experiment, the impact of a mood-induction process on a gambling task was investigated. A bad mood was brought on by either anticipating a tense situation or thinking about a stressful event. To boost their mood, other participants watched comedic acts. Next, each participant had to decide whether to place a risk-free, low-paying wager or a risky, high-paying wager. The effects of recurrent attachment priming on paranoia, mood, and intentions to seek assistance were examined in a longitudinal experimental design to investigate whether cognitive fusion mediated these effects. In this study, 79 participants with high levels of non-clinical paranoia (aged 18–50) were randomly assigned to secure or insecure-avoidant priming conditions. They practiced the visualization prime for four days in a row. They were then evaluated on standardized measures of paranoia, positive and negative affect, help-seeking intentions, and cognitive fusion. Mediation analyses revealed indirect effects of the primes on paranoia and negative affect (Newman et al. 2021).

The third hypothesis shows that a student of different ages, education, and residence will differ significantly in terms of their moods, cognitive styles, and decision-making. This result shows that there are significant gender differences in the decision processes of the participants of this study. Depending on their ages, the participants behave differently when

making decisions because the relevance they allocate to the task, the decision maker, and the environmental factors that determine the resolution process are different in some aspects. Thus, the finding shows that girls' score is high in decision-making, which means that girls are more concerned with uncertainty, doubts, and the dynamism involved in the decision. They place more value on time and money; they are more concerned about the consequences that may derive from the decision, whether these consequences affect them or others. Girls are more aware of the constraints that the setting and close persons put on them, and their emotions are more important in the decision process.

Conversely, boys assign more importance to the analysis of the information required to carry out the decision and to the definition of the goals or purposes of the decision. They are more motivated during the process and feel more intense pressure from all the work-related aspects. From the beginning to the end of the semester, three cognitive diatheses un-primed cognitions, cognitive reactivity, and mood reactivity were examined in a prospective longitudinal study of 322 college students who were not depressed. The findings suggest that various cognitive vulnerabilities may be relevant to predicting increases in depressive symptoms over time, in general, as opposed to within previously depressed individuals, in particular (Perez et al. 2021).

Age differences shown in Table 4 indicate that rational ability is higher in intermediate students than in graduates. Results indicate that rationalization decision-making power is also high in intermediate compared to graduates. Results show that decision-making vigilance power is high in intermediate as compared to graduate. Hypervigilance is also high in intermediate as compared to graduates, and Buck Passing is high in graduates as compared to intermediates. Findings show sector differences among study variables. Results indicate that private-sector students are higher in decision-making as compared to the government sector. Results show that residence differences among study variables indicate that PANAS's Positive level is higher in urban than rural areas. Results also indicate that decision-making is high in urban areas compared to rural ones. Decision-making defensive results show that decision-making vigilance power is high in intermediate as compared to graduate. Hypervigilance is also high in intermediate as compared to graduates, and Buck Passing is high in graduates as compared to intermediates. Findings show that sector differences are present among study variables. Results indicate that private-sector students are higher in decision-making as compared to the government sector. Results show that residence differences among study variables indicate that PANAS's Positive level is higher in urban than rural areas. Results also indicate that decision-making is high in urban areas compared to rural ones—indicating that decision-making is defensive.

#### 4 CONCLUSION

The current study aimed to explore the impact of mood and cognitive styles on college students' decision-making. The study's first aim was to determine the relationship between variables and concluded that cognitive mood styles and decision-making are positively correlated. The study's second aim was to explore the effect of mood and cognitive style on decision-making during post-pandemic, so it was concluded that mood is a true-aqujh90o predictor of decision-making; meanwhile, cognitive styles were also the accurate predictor of decision-making. The present study also concluded that girls are at a higher level of decision-making than boys. The first limitation was regarding the generalizability of the study; data were collected only from college students due to time constraints and limited resources. Therefore, the results have limited generalizability. Furthermore, social desirability could threaten the internal validity of the research, since the information was collected through self-report measures. The main limitation of this study is its use of a survey research method, due to which results of this study could not pinpoint a cause-and-effect relationship among variables. This study only gives information about the relationship among study variables;

instead, it only provides information on the relationship among the study variables. This was quantitative research which did not produce in-depth information, unlike qualitative research. Therefore, the information gathered needed to be more enriched and extensive. It is suggested for future research that qualitative work should be done in addition to quantitative data. Future researchers should rely on more than survey research. Instead, they should use a multi-method approach.

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## The implementation of sport for development (S4D) framework to enhance character building in physical education

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**ABSTRACT:** Character education is one of the educational goals in Indonesia. Physical education has an essential role in realizing character education through the concept of sport for development (S4D). This study aims to create a physical education learning model to support student character formation. This research method uses a quasi-experiment design. Three main characters were observed in the pre and post-test. The characters were teamwork, honesty, and risktaker. There were 138 students aged  $8.3 \pm 1.19$  years involved in this study. The observation form and score rubric were used to see the implementation of character. Wilcoxon test by SPSS 26 computer software was used to analyze the significant difference between the pre and post-test. The results of this study indicated a significant difference between the pre and post-test of all characters (sig. < 0.05). In conclusion, the sport for development (S4D) framework could support character-building in physical education.

**Keywords:** Physical Education; Character Development; Sport for Development

### 1 INTRODUCTION

Education is an essential aspect of the development of individual qualities (Abdi 2021). Education plays a role in transferring knowledge, facilitating learning, and inspiring innovation; it is essential for individual and community development (Guo et al. 2019). So that the implementation of learning knowledge, skills, and attitudes becomes a goal in education (Sipahutar et al. 2021). In addition, education is also an essential indicator of the progress of a nation (Aziizu 2015). To achieve educational goals, the quality of education is crucial and must be guaranteed (Wößmann & Hanushek 2007). One of the main goals of education in Indonesia is the formation of student character (Yusuf & Aziizu 2015). Implementation of Education in Indonesia as mandated in the Law on the National Education System No. 20 of 2003, which regulates related to the goals of education in Indonesia (Fuad & Alfin 2017). Various efforts to improve the quality of education in Indonesia include curriculum adjustments (Agustin & Sugiyono 2019). In the 2013 curriculum, the integration between cognitive, affective, and psychomotor components is a part that must be developed and evaluated by teachers (Sholekah 2020). Character formation is vital in projecting humans as role models in doing good (Shuhari et al. 2019).

Character education aims to shape one's personality through character education, the results of which can be seen in one's actions, namely good behavior, honesty, responsibility, respecting

the rights of others, and hard work (Ngatiman & Ibrahim 2018). So that character education is strived to become a system to instill character values in students, which contains knowledge, individual awareness, determination, and the willingness and action to implement values, both towards God Almighty, oneself, fellow human beings, environment, as well as the nation so that our human (Marheni, S, & Purnomo 2019). Character education in the teaching and learning process can increase the level of the noble character of students by setting an example for students' character (Marini et al. 2019). Character formation can be integrated with the teaching and learning process, meaning that each subject must be associated with norms or values and improvement and application in everyday life (Ratnasari 2019).

Sport For Development (S4D) is a framework to strengthen the application of the positive values of sport in life (Rosso et al. 2016). The application of sport as a medium for human development is great potential if developed and directed properly (Meir 2020). The S4D concept that applies values in sports that cover various moral aspects can also be applied to education (Chong et al. 2022). The opportunity for S4D to be implemented in Physical education is possible when viewed from the similarity of the media used (Dao & Smith 2019). This study aims to determine the effectiveness of character learning in physical education learning by applying the concept of sport for development in it.

## 2 METHOD

### 2.1 *Research method*

This study uses a quasi-experimental research design. A total of 138 elementary school students aged  $8 \pm 1.5$  years were involved in the study (Table 1).

Table 1. Research sample.

Gender	First Grade	Second Grade	Third Grade	Fourth Grade	Total
Male	17	15	12	14	58
female	18	21	20	21	80
Total	35	36	32	35	138

### 2.2 *Research procedure*

The implementation of the research started from the initial observation (pretest) of the implementation of physical education learning. This initial observation assessed the behavior of actively involved students and showed the application of sports values such as cooperation, honesty, and risk taker. The assessment score is seen in the rubric that has been prepared (Table 2). Furthermore, six intervention sessions were carried out by applying S4D to the learning syntax. In the intervention session, each character was discussed at the

Table 2. Rubric for observing student characters.

Score	Criteria
1	Students do not apply the character
2	Students apply the character with the teacher's intervention or help
3	Students Apply the character independently
4	Students remind/motivate other students to apply character.

beginning of the class. Furthermore, students could discuss and make reflections on their understanding. During the implementation, students could demonstrate the character they are learning. At the end of the class, the reflection and discussion sessions inquired about their learning experience of the character in the physical activity. The teacher observed their learning using the same method as at the initial observation (posttest).

### 3 RESULTS AND DISCUSSION

#### 3.1 Descriptive data

The Kolmogorov-Smirnov normality test was applied to compare the data distribution with the normal distribution standard. Furthermore, the data were not in the normal distribution (sig. < 0.05). The Wilcoxon non-parametric test will be conducted to identify the significant difference between the pretest and posttest of each variable.

Table 3. Descriptive data and normality test.

Variable	Mean	SD	Sign
Pretest Teamwork	1.89	0.780	0.000
Pretest Honest	2.08	0.802	0.000
Pretest Risktaker	2.02	0.832	0.000
Posttest Teamwork	2.99	0.815	0.000
Posttest Honest	2.96	0.823	0.000
Posttest Risktaker	3.04	0.809	0.000

#### 3.2 Teamwork

There is a significant difference between the pretest and posttest of teamwork (sig. < 0.05). Furthermore, the mean in the posttest is higher than the pretest (Table 4). It implies that the students have learned and improved their understanding of teamwork character. Furthermore, they have applied teamwork during the activity in physical education class. Teamwork could be trained by specific training methods (McEwan & Beauchamp 2018). It could be performed by anyone of any age or gender (Mokhtari et al. 2014). Furthermore, teamwork is one of the dominant values required in sports (McEwan 2020). It determines the achievement of the sports team (Halldorsson et al. 2017). In physical education, problem-solving teaching methods could develop student teamwork (D’Isanto et al. 2022).

Table 4. Comparative test in teamwork.

Variable	Mean	SD	Z Score	Sign
Pretest Teamwork	1.89	0.780	-8.298	0.000
Posttest Teamwork	2.99	0.815		

#### 3.3 Honest

There is a significant difference between the pretest and posttest of honest character (Sig. < 0.05). Furthermore, the student performed higher in posttest observation than in the pretest (Table 5). Students learn social skills through physical education (Deng & Legge 2022).

These social skills correlate with positive characteristics such as honesty, respect, transparency, responsibility, tolerance, and justice (Salinas & Angeles 2022). The student could learn the character through physical education at an early age (Dobell et al. 2021). Furthermore, implementing sports for development (S4D) could be a great option for the student to learn about the characters through sports.

Table 5. Comparative test in honest.

Variable	Mean	SD	Z Score	Sign
Pretest Honest	2.08	0.802	-6.927	0.000
Posttest Honest	2.96	0.823		

### 3.4 Risktaker

There is a significant difference between the pretest and posttest of the risktaker character (Sig. < 0.05). Furthermore, the student performed higher in posttest observation than pretest (Table 6). Physical education could engage students and challenge them to do new tasks or skills (Shang et al. 2022). Student motivation could empower them to try new activities (Jiang et al. 2021). Personal and social development, which could be strengthened in physical education, is not only being a risktaker but also good decision making (Opstoel et al. 2020).

Table 6. Comparative test in risktaker.

Variable	Mean	SD	Z Score	Sign
Pretest Risktaker	2.02	0.832	-7.705	0.000
Posttest Risktaker	3.04	0.809		

## 4 CONCLUSION

Based on the results of this study, the application of the sport for development (S4D) concept in physical education could support character building. Students have a new experience in learning character by reflecting on the knowledge of the character and implementing the character into the actual activity. More characters could be involved in future studies to gain more insight into character building. Further study could be conducted to inquire about the possibility and effect on students of different ages.

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## Beliefs of fun in learning and attitudes to inclusive education

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**ABSTRACT:** A significant proportion of teachers are concerned about their capacity to satisfy the educational requirements of students with disabilities in general education classrooms. Fun in learning also has a good effect on the implementation of inclusion, as does the attitude of the teachers. There needs to be more data to support the differing perspectives on inclusive education held by general and special education teachers. This study's objective is to examine the outlook on inclusive education held by general and special education instructors in Indonesia and the link between their belief in fun teaching and learning. The Multidimensional Attitudes toward Inclusive Education Scales (MATIES) will be used to investigate attitudes about inclusive education. It comprises of 18 questions that are aimed at assessing the emotional, cognitive, and behavioral aspects of attitudes toward inclusion in an efficient way. The ten-item questionnaire has been devised to assess the fun of teaching and learning. Validity and dependability were used in the development of the instruments, whereas the Bivariate Correlate test was utilized to analyze the data. The highest subscale mean of teachers' attitudes towards inclusion on the 1 to 6 scale is a behavioral scale which has a mean of approximately 4,82 (SD=0,79), and the mean for teachers belief about fun in learning is 3,27 from range 1 to 4 and SD=0,29 which is a high level of belief of fun in teaching.

### 1 INTRODUCTION

Establishing an inclusive education system across Indonesia is a challenging societal undertaking. Indonesia is the world's biggest archipelagic country, with over 17.524 islands and over 270 million people, forming the world's most varied multi-ethnic state.

Indonesian schools are classified into mainstream, special, and inclusive. Typically, mainstream (also known as ordinary) schools do not accept students with exceptional educational needs. Historically, these children might attend special schools (*Sekolah Luar Biasa*) dedicated to specific handicap categories, such as physical impairment or deafness. Over the past two decades, inclusive schools have grown intending to educate all students. The introduction of these inclusive schools has increased educational opportunities for previously excluded students, particularly those with significant intellectual disabilities or communicative impairments.

#### 1.1 *Attitude in inclusive education*

Inclusive Education (IE) has helped solidify the notion that education for children with Inclusive Education (IE) is built upon the notion that education for children with exceptional

needs is a fundamental right and societal obligation, not a matter of privilege or charity. Thus, IE is not only a policy question but a 'complex educational ideology' founded on accepting, elevating, and respecting all people regardless of their differences.

Several factors have been identified that support or act as barriers to the successful implementation of IE, particularly the attitudes of teachers. Thus, it is essential to understand teacher attitudes regarding IE, as they will serve at the frontlines of educational systems, and the grassroots level of policy and program implementation.

Many studies indicate that the teacher's role is crucial in adapting and deciding the effectiveness of inclusive education implementation. According to prior research, teacher attitudes are necessary to implement inclusive education effectively. Recent research by Indonesian researchers seeking to develop inclusive classroom practices has suggested that teachers' belief about fun in learning merits further research.

## 1.2 *Belief about fun in learning*

With a widely established definition, measuring becomes complex so that study findings may be consistent. Fun is often treated as a commonplace idea in academic literature, and as a result, there is a "lack of conceptual clarity in the literature about the nature of fun." According to Tisza and Markopoulos, fun is an affective state in which one feels in control of the activity and is independently motivated to participate, is immersed in the experience by losing a sense of time and space, letting go of social inhibitions, and is presented with an optimal level of challenge - one that corresponds to one's abilities. This is consistent with Collins' modern depiction of "fun teaching" in teacher education: the "fun," "energy," and "enthusiasm" that pervades North American education and popular teacher professional development books.

There are several arguments for why having fun in learning might be worthwhile. For example, it helps, engages, and retains students, resulting in increased learning opportunities. As a result, much scientific effort has been devoted to making learning more fun. One strategy for making learning fun is creating learning environments that stimulate learners' intrinsic motivation by piquing their interests. These learning environments may be found in informal and non-formal educational settings such as science museums, maker spaces, and coding clubs.

The literature on fun in learning has a variety of perspectives on their meanings and effects. Negative views see fun as the polar opposite of significant "work" and regard it as a pointless diversion from learning. Previous studies have shown that Indonesian teachers place a high value on having fun and being happy in their classrooms as an essential element of the teaching and learning process for both teachers and their students. However, there is research that concludes the opposite for teachers in the West countries, who tend to see happiness as a "tool" for enabling successful teaching or detrimental to learning.

It is interesting to understand the meaning and connection of fun in learning and the other factors to enhance the implementation of inclusive education, especially in the Indonesian context. To explore this issue, this current research will address the association between Indonesian general and special teachers in attitude and belief about fun in learning.

## 2 METHODS

### 2.1 *Participant*

The participants, as depicted in Table 1, were 125 Indonesian teachers with experience teaching children with exceptional educational needs in general and particular education schools, the majority of whom were female (78%) who worked in general (n = 88) or special schools (n = 37). Most participants (44,7%) have more than ten years of teaching experience, while 28% have five to ten years of experience and 27,3% have fewer than five years of



teaching experience. Most participants (59,1%) educate in urban schools, while 40,9% teach in rural schools across Indonesia. Sixty percent of respondents have received training on inclusive education and how to interact with children with special needs.

Table 1. Descriptive statistics about the participants.

Variables	Sub-variables	N
Gender	male	28
	female	97
School Type	general school	88
	special school	37
Length of teaching	<1 year	9
	1-4 years	26
	5-10 years	36
	> 10 years	54
Training in inclusive education	yes	77
	no	48
School Area	urban	71
	rural	54

## 2.2 Research instruments

Teachers completed the following measures:

### *The Multidimensional Attitudes Toward Inclusive Education Scale (MATIES)*

Creswell stated how a research tool or instrument is required to quantify a variable in a quantitative study. Additionally, the employment of research instruments in quantitative design has long been a preferred approach among researchers. In light of this assertion, the researchers used the questionnaire titled The Multidimensional Attitudes toward Inclusive Education Scale (MATIES). Maties are utilized to measure teachers' attitudes toward inclusion. It is 18 item questions that was developed by Dr. Marian Mahat from Monash University to effectively measure affective, cognitive, and behavioral aspects of attitudes. MATIES have been translated and modified to the Indonesian language utilizing Guillemín's process and methodologies which include both a back-translation methodology and a decentering posture. Following the translation, it was transformed into an online survey to streamline the data collection process.

To make it simpler for Indonesian respondents to complete the survey, the answer item for Maties has been modified from its original form. Items were assessed on a six-point scale ranging from one ("very strongly agree") to six ("extremely strongly disagree"). The answer items in the Indonesian version of Maties have been altered from 1 ("very strongly disagree") to 6 ("extremely strongly agree"). All modifications made during data processing are restored to the original Maties version. Three elements (each with six questions) comprise the scale: cognitive (items 1-6), emotional (items 7-12), and behavioral aspects of attitudes (items 13-18). Internal consistency was reported by the author of the original Maties version to be between  $=.77$  and  $=.91$  in earlier experiments. A mean score is obtained by averaging the elements in each of the three criteria.

### *Fun in learning instrument*

The Beliefs about Fun in learning instrument was developed and tested regarding its validity and reliability. Each item was a five-point Likert scale ranging from one ("strongly disagree") to four ("strongly agree"). There are two negatively worded statements, in item number 3 (Fun activities can get in the way of student learning) and item number 7 (Fun is not needed nor expected in learning).

The validity was assessed using Pearson's  $r$ , a bivariate correlation measure, using SPSS 25 software. The standard for determining the validity of an item is if the value of  $r$  count (value) is greater than a predetermined  $r$  table value. If  $r > r$  table, then the item is deemed to be valid. The results of the validity test of each item can be seen in Table 2.

Table 2. The validity test for fun in learning statements instrument.

Item	Statement	$r$ table	$r$ count	Conclusion
1	Learning should involve fun	.122	.392	Valid
2	To learn effectively, students must enjoy learning	.122	.406	Valid
3	Fun activities can get in the way of student learning*	.122	.281	Valid
4	Fun helps in teaching students with special needs	.122	.426	Valid
5	Fun is important in teaching students without special needs	.122	.351	Valid
6	Fun supports inclusive teaching (all children included in the classroom)	.122	.453	Valid
7	Fun is not needed nor expected in learning*	.122	.269	Valid
8	Children learn best through collaborative activities	.122	.358	Valid
9	Good teaching occurs when there is mostly teacher talk in the classroom.	.122	.351	Valid
10	Students' educational potential is fixed at birth	.122	.226	Valid

Table 2 illustrates that the calculated  $R$ -value obtained for all items is greater than the corresponding  $r$  'table value.' It can be concluded that all items within the Beliefs about Fun in learning are valid.

The reliability of the Beliefs about Fun in learning instrument was assessed by calculating Cronbach Alpha, using SPSS 25 software. The closer to the number 1 means the higher the reliability, and the closer to the number 0 means the lower the reliability [25]. The results of this reliability test are shown in Table 3. A Cronbach Alpha value greater than 0.7 indicates an acceptable measure of reliability.

Table 3. The reliability of fun in learning instruments.

Variable	Alpha Cronbach	Summary
Fun in learning	.746	Reliable

Table 3 shows that the obtained value Alpha was  $\alpha = 0.746$ . As this is great that the threshold value for reliability, then the questionnaire can be seen as reliable.

### 2.3 Demographic and work-related variables

These included gender, academic degree, years of teaching experience, training in inclusive education (yes or no), type of school (binary: general or special education), and school area (urban or rural).

### 2.4 Ethics

The Educational Research Ethics Committee, Institute of Psychology, Pedagogical University of Krakow reviewed the research and gave a favorable opinion.

### 3 RESULT AND DISCUSSION

This research aimed to evaluate the relationship between fun in learning to the attitudes toward inclusion among Indonesian teachers in general and particular education schools. The averages and standard deviations for the components of teachers' attitudes toward inclusion and their belief in the importance of fun in learning are shown in Table 4. The behavioral and cognitive measures revealed relatively high positive attitudes, while the affective scales revealed somewhat positive views. Additionally, teachers expressed strong positive opinions about the fun of teaching and learning, with an average of 3,27 out of a possible range of 1,00 to 4,00.

Table 4. The means in each category instruments.

Means and standard deviations of main study variables (N = 125).			
	Range	Mean	SD
Attitudes toward inclusive education			
MATIES			
Cognitive	1.00–6.00	4,12	0,80
Affective	1.00–6.00	3,95	0,90
Behavioral	1.00–6.00	4,82	0,79
Belief about fun in learning	1.00–4.00	3,27	0,29

Table 4 also illustrates the trend directly proportional to the average participant's response to attitudes toward inclusive education and beliefs about the fun in learning. The mean of teachers' attitudes toward inclusion is surprisingly high on a 1 to 6 scale. The highest subscale response is a behavioral scale which has a mean of approximately 4,82 (SD=0,79), and the next subscale is Cognitive (mean=4,12; SD=0,80), and the lowest category is the Behavioral subscale (mean=3,95; SD=0,90). The second variable in this research is teachers' belief towards fun in learning. It is clear that the mean for teachers' belief about fun in learning is 3,27 from range 1 to 4 and SD=0,29, which is a high level of belief of fun in teaching.

Table 5 shows that the significance level of the variable teacher's attitudes toward inclusive education towards fun in learning using 2-tailed is significant at  $0.002 < 0.05$ , which

Table 5. The correlations between attitude toward inclusion to fun in learning.

Correlations Result Test			
		Attitude	Fun
Attitude toward inclusive education	Pearson Correlation	1	.274**
	Sig. (2-tailed)		.002
	Sum of Squares and Cross-products	52.035	6.308
	Covariance	.420	.051
	N	125	125
Fun in teaching and learning	Pearson Correlation	.274**	1
	Sig. (2-tailed)	.002	
	Sum of Squares and Cross-products	6.308	10.180
	Covariance	.051	.082
	N	125	125

\*\*Correlation is significant at the 0.01 level (2-tailed).

means a substantial relationship between the two variables. While the correlation coefficient (r) is 0.274\*, the correlation coefficient value indicates a relationship between the two variables. The asterisk (\*) on the correlation coefficient suggests that the relationship between the variable teachers' attitudes toward inclusive education towards belief about fun in learning has a directly proportional relationship. If the teacher has a good outlook on inclusive education, the value of the fun-in-learning variable will also be positive.

The teachers' attitude toward inclusive education is regarded as one of the most crucial.

Indonesian teachers from this result rated themselves related to their attitude towards inclusive education as relatively high, especially in the behavioral aspect, then the cognitive aspect followed. It is possible that what they do and appears as a behavioral aspect in class, for example, in the question item "*I am willing to adapt the curriculum to meet the individual needs of all students regardless of their ability,*" is a real act of their attitude towards students with special needs. In the classroom and is the practice of item mates on the cognitive dimension, "*I believe that any student can learn in the regular curriculum of the school if the curriculum is adapted to meet their individual needs.*" It concludes that from this study, Indonesian teachers have a positive attitude toward inclusion, especially in the Behavioral and Cognitive dimensions. This is similar to the findings of Jun et al. research which examined the influential factors of 481 in-service preschool teachers' attitudes toward inclusive education in Beijing, China. It is proven that teachers with a positive attitude toward students with special needs were more ready to include them in the classroom.

Teachers are the single most significant component in fostering fun and happiness in the classroom, hence the emphasis on process rather than the result, effort rather than achievement, and the positive worth of risk-taking and errors produce a high degree of student engagement and happiness. Teachers' belief in fun learning can impact how they think in relation to teaching and handling students with disabilities in their classroom and how they feel in the classroom. It is seen in the result that from range scores 1 to 4, Indonesian teachers, on average, rated their belief of fun in learning as 3,27, which is relatively high. According to research conducted with Indonesian teachers, their attitudes about how learning happens are impacted by their perceptions of happiness and, implicitly, enjoyment in relation to learning. These teachers frequently discussed the connection between fun and learning; many believed that fun was a crucial component of effective classroom instruction.

#### 4 CONCLUSION

Results of the current study indicate that teachers rate themselves highly on agreeing that teaching and learning in both school settings (general and special school) should be involved in fun or happiness. The highest subscale mean of teachers' attitudes towards inclusion on the 1 to 6 scale is a behavioral scale which has a mean of approximately 4,82 (SD=0,79), and the mean for teachers belief about fun in learning is 3,27 from range 1 to 4 and SD=0,29 which is a high level of belief of fun in teaching. While this is encouraging, other findings from our study are cause for concern. First, though the attitude toward inclusive education was associated with inclusion training, more than 60% of teachers in our study reported receiving any training on inclusion. Second, teachers rated their attitudes towards students with disabilities in inclusive settings and their beliefs about fun in learning as relatively high. Third, there is a linear correlation between teachers' attitudes toward inclusive education to their opinion about fun in learning. These findings cheered up the implementation of inclusive education in Indonesia.

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## The implementation of guidance and counselling' supervision on teachers in middle school

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**ABSTRACT:** Many guidance and counseling teachers do not perform as expected in the competence standard. However, the performance of guidance and counseling teachers is influenced by professional behavior (an internal factor) and supervision related to guidance and counseling (an external factor). The good performance of a guidance and counseling teacher can be detected whether or not he or she can do the main jobs in providing services to support the function of understanding, the function of prevention, the function of maintenance and development, the function of alleviation, and management activities. Therefore, the supervision of guidance and counseling teachers has a strategic role in developing teachers such that they are becoming more professional in providing services related to their jobs. This research investigates the role of supervision in improving professionalism guidance and counseling teachers. The research was conducted at four public junior schools in west Surabaya. It is quantitative research in which the subjects of the research are the principals and guidance and counseling teachers. The results of the research show that the average score of guidance and counseling teachers is 87.69. It means that the performance of the teachers is good enough. However, the score can be increased significantly if the teachers give attention to the data collection and they do their job suitably with the competence standard of counselors. It is expected that the supervision activities give a good impact on the performance of the guidance and counseling teachers.

### 1 INTRODUCTION

Guidance and counseling are a part that cannot be separated from educational components, and it is very imperative in achieving educational purposes. As one of the components of education, guidance and counseling services play a big role in helping students to improve their personalities in the future. In this case, an adviser has a main role in doing guidance and counseling services. The advisers have a role in helping students to develop their personal life, social life, and learning activities, as well as planning and carrier development. As stated in the 2016 junior high school curriculum, guidelines of guidance and counseling (2016:10), the general purpose of guidance and counseling is to make the students independent and develop their potential optimally. In developing themselves, students must know who they are, understand their environment, can absorb guidance, and actualize themselves based on their ability, talent, and interests.

Two regulations that are used as guidelines in the application of guidance and counseling are (i) The Minister of National Education Regulation of the Republic of Indonesia No. 27 from the year 2008 regarding the Standard of Academic Qualification and Counsellors' Competence Standard and (ii) the Regulation of Minister of Education and Culture of Indonesia No. 11 from the year 2014 about Guidance and Counselling in Primary Education and Middle Education. Based on the Regulation of the Minister of Education and Culture of

Indonesia No. 11 from the year 2014, the details of guidelines are presented in the appendixes of the regulation. It is stated that the performance of guidance and counseling teachers influences the application and the results of education. Ruky (2002:14) stated that performance (work achievement) is the result of work, quality, and quantity, which is achieved by employees.

The performance of advisers is also influenced by supervision activities to guidance and counseling teachers. This statement was written by Prayitno (2001:24) that supervision is an activity for monitoring by assessing and developing through guiding, advising, providing an example, and suggesting to the advisers in doing their job.

Good Carter (see Sahertian 2008) wrote that a supervision program is a plan or an effort of the school officers to lead teachers and other officers in revising study matter, stimulating, revising study purposes, teaching materials, teaching methods, and evaluating learning results. Moreover, supervision is a planned guidance effort for helping teachers and other school employees do their job, effectively (Purwanto 2000).

This research is conducted to show the effect of the application of supervision to guidance and counseling teachers related to their performance or professionalism in schools. This research was conducted at four public junior high schools (SMPN) located in West Surabaya, that is, SMPN 28 (Lakasantri Sub District), SMPN 20 (Sambi Kerep Sub District), SMPN 25 (Sukomanunggal Sub District), and SMPN 26 (Tandes Sub District). The subjects of the research are the principals and guidance and counseling teachers.

## 2 METHOD

The concept of the research is shown in Figure 1.

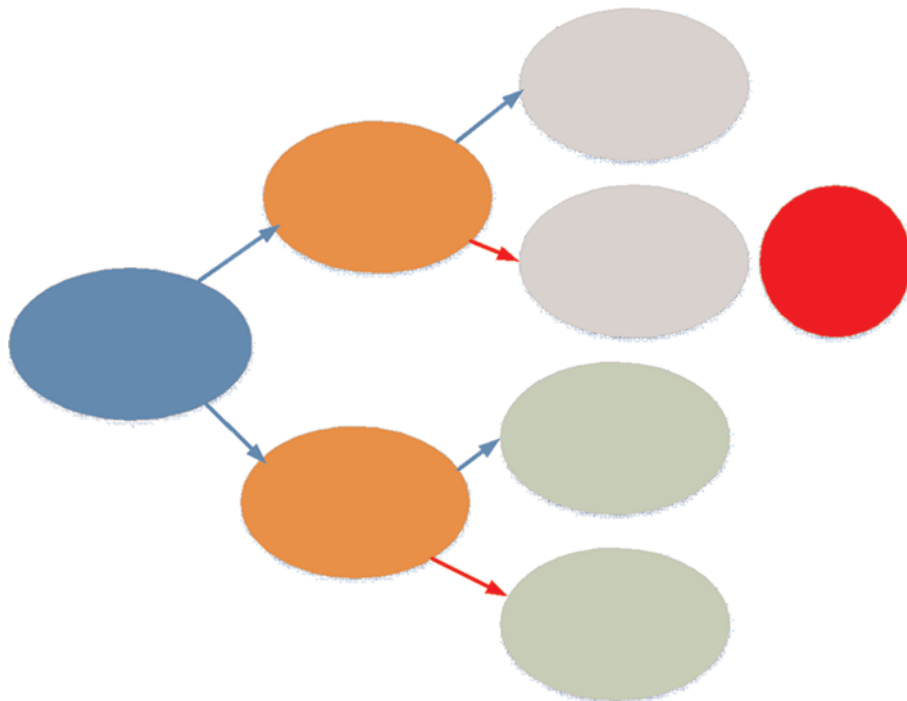


Figure 1. Concept of the research.



This research is a quantitative one in which the subjects are principals and guidance and counseling teachers at these schools. The measurement uses questionnaires which are developed by the researcher based on the definition of operational variables and constructed based on the Likert Enquete personality score. The guidelines for the banquet and interview are presented in Tables 1 and 2. A quantitative description analysis is utilized for analyzing data.

Table 1. The guidelines of the banquet.

Variable	Indicator	Sub-indicator
Supervision of guidance and counseling	1. Program	<ul style="list-style-type: none"> <li>a. Assessment</li> <li>b. Analysis on assessment</li> <li>c. Yearly program of guidance and counseling</li> <li>d. Semesterly program</li> </ul>
	2. Activity for servicing	<ul style="list-style-type: none"> <li>a. List of counselees</li> <li>b. List of needs and problems</li> </ul>
	3. Activity for guidance and counseling services	<ul style="list-style-type: none"> <li>a. Understanding <ul style="list-style-type: none"> <li>1) Sociometry</li> <li>2) Sociogram</li> <li>3) Home visit</li> <li>4) Anecdote notes</li> <li>5) Case conference</li> </ul> </li> <li>b. Counseling services <ul style="list-style-type: none"> <li>1) Individual counseling</li> <li>2) Group counseling</li> <li>3) Classical guidance</li> <li>4) Group guidance</li> <li>5) Consultation</li> <li>6) Mediation services</li> <li>7) Referral</li> </ul> </li> <li>c. Indirect services <ul style="list-style-type: none"> <li>1) Guidance board</li> <li>2) Boxes of problems</li> <li>3) Bibliocounseling</li> <li>4) Audiovisual</li> <li>5) Audio</li> <li>6) Printed media</li> <li>7) Students' map</li> <li>8) Observation</li> <li>9) Enquete/ inventory</li> </ul> </li> </ul>
	4. Reporting	<ul style="list-style-type: none"> <li>a. Implementation of guidance and counseling program</li> <li>b. Semesterly report</li> <li>c. Yearly report</li> </ul>
	5. Evaluation	<ul style="list-style-type: none"> <li>a. Evaluation of results and processes of guidance and counseling program</li> <li>b. Analysis of evaluation results on guidance and counseling program</li> <li>c. Follow-up of evaluation results on guidance and counseling program</li> </ul>

Table 2. The guidelines for interview.

No.	Research focus	Question
1	Academic supervision processes	Preparation for academic supervision
		Implementation of academic supervision
		Evaluation of the academic supervision
		<ul style="list-style-type: none"> <li>a. What is the purpose of the implementation of academic supervision?</li> <li>b. What is discussed in the preparation for academic supervision?</li> <li>c. What documents are needed in the preparation for academic supervision?</li> <li>d. Why is preparation needed before the implementation of supervision?</li> </ul>
		<ul style="list-style-type: none"> <li>a. What is the role of a supervisor in the implementation of academic supervision?</li> <li>b. When is the academic supervision conducted?</li> <li>c. What is observed by a principal in the implementation of academic supervision?</li> </ul>
		<ul style="list-style-type: none"> <li>a. What is the role of a principal or a supervisor as an evaluator in academic supervision?</li> <li>b. Is the evaluation of the principal to the guidance and counseling teachers given directly?</li> <li>c. Why is an evaluation conducted after the academic supervision?</li> </ul>

### 3 ANALYSIS AND DISCUSSION

The research data is shown in Table 3.

Scoring of the supervision of the guidance and counseling teachers conducted by the principal is shown in Table 4.

The list of questions in the research is provided in Table 5.

From the survey, conducted by the researcher, two schools (SMPN 25 Surabaya and SMPN 28 Surabaya) made guidance and yearly guidance and counseling programs, three schools (SMPN 20 Surabaya, SMPN 25 Surabaya, and SMPN 28 Surabaya) made guidance and semesterly guidance and counseling programs and one school made guidance and weekly guidance and counseling program. SMPN 20 and SMPN 25 prepared syllabi or action plans; however, only SMPN 25 Surabaya designed a device for guidance and counseling.

The problem is the Enquete of the student's needs. This Enquete is important such that teachers know what the need of students and the guidance and counseling teachers can develop suitable programs for students. However, only at SMPN 28, the Enquete is filled. Similarly, only SMPN 26 prepared the RPL of individual counseling.

Another finding of the problem is about the RPL of group counseling. No schools have RPL of group counseling. It can be said that this program has not been properly conducted yet. However, three schools have RPL of classical guidance, that is, SMPN 20 Surabaya, SMPN 25 Surabaya, and SMPN 28 Surabaya. Two schools, namely SMPN 25 Surabaya and SMPN 26 Surabaya, have group guidance.

Only SMPN 28 Surabaya did not have a report on guidance and counseling practices and no schools prepared a report on group counseling. Two schools, SMPN 20 Surabaya and SMPN 25 Surabaya, have classical guidance reports. Only SMPN 20 Surabaya school has reported on the implementation of group guidance.

Table 3. Obtained data from the 4 SMPNs in West Surabaya.

School name Guidance and Counselling data	SMPN 20	SMPN 25	SMPN 26	SMPN 28
Yearly Program		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Semesterly Program	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Weekly Program		<input checked="" type="checkbox"/>		
Syllabus/Action Plan for guidance and counseling activity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Devices for guidance and counseling		<input checked="" type="checkbox"/>		
Enquete the need for students				<input checked="" type="checkbox"/>
Design of the implementation of an individual counseling			<input checked="" type="checkbox"/>	
Design of the implementation of a group counseling				
Design of the implementation of a classical counseling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Design of the implementation of a group guidance		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Report on the implementation of an individual counseling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Report on the implementation of a group counseling				
Report on the implementation of a classical counseling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Report on the implementation of a group guidance	<input checked="" type="checkbox"/>			
Collaboration report		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Home Visit Report	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Case conference report			<input checked="" type="checkbox"/>	
Report of Number of foster students	<input checked="" type="checkbox"/>			
Report of presentation of students and follow-up	<input checked="" type="checkbox"/>			
Report of students with problems	<input checked="" type="checkbox"/>			
Report of achievers students	<input checked="" type="checkbox"/>			
Monthly reports	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
List of students		<input checked="" type="checkbox"/>		
Communication cards			<input checked="" type="checkbox"/>	
Sociometry			<input checked="" type="checkbox"/>	
Supervision on the guidance and counseling teachers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Table 4. Scoring of the supervision to the guidance and counseling teachers at 4 SMPN in West Surabaya.

No.	School	Name (initial) of the Guidance and counseling teacher	Score
1	SMPN 20 Surabaya	AW	88
		DRP	88
		ES	88
2	SMPN 25 Surabaya	YR	87.3
3	SMPN 26 Surabaya	AH	94.59
4	SMPN 28 Surabaya	AS	84
		DD	84

Table 5. Instrument for monitoring specific administration for guidance and counselling teachers *SMP/SMA/SMK*.

Name of teacher: . . . . .

Name of school: . . . . .

No.	Aspect to be observed	Score					Remarks
		1	2	3	4	5	
1	Does the teacher have a letter of assignment for guidance from the principal at the latest academic year?						
2	Does the teacher have notes for the duration of counseling services at a school equivalent to 24 hours per week?						
3	Do the advisers make the yearly program at the latest academic year by themself?						
4	Do the advisers make the semesterly program at the latest academic year by themself?						
5	Do the advisers make the monthly program at the latest academic year by themself?						
6	Do the advisers make the weakly program of counseling services by themself?						
7	Do the advisers make the daily program of counseling services by themself?						
8	Do the advisers make a unit of counseling services by themself?						
9	Do the advisers make the list of foster students and personal books by themself?						
10	Do the advisers implement 9 counseling services (Orientation, Information, Placement, distribution, mastering of contents, individual counseling, group guidance, group counseling, mediation, and consultation)						
11	Do the advisers implement support activities (application of implementation, data set, case conference, home visit, change the handling of cases)?						
12	Do advisers make unit services of the support activities by themself?						
13	Do advisers implement evaluation on counseling practices? (Quick scoring, short-term scoring, long-term scoring)						
14	Do advisers implement analysis on evaluation results of counseling practices (semesters 1 and 2)						
15	Do the advisers implement follow-up of counseling practices?						
16	Do the advisers make administration the implementation of the counseling practices (Cases book, event notes, Sociometry, graph of problems, Jurnal of guidance and counseling activities, guests book)						
17	Do the advisers make monthly reports, Semesterly reports, and yearly reports?						
18	Do the advisers provide counseling services as written in the schedule?						
19	Do the advisers have additional jobs besides teaching?						
20	Do the teachers have a teaching agenda book?						
21	Have the advisers read Minister of National Education Regulation No. 22, 23 the year 2006, and No. 20 the year 2007?						
22	Do the advisers have guidebooks (development of RPP/ teaching plan, guidelines for syllabus development, guidelines for teaching material development, etc)						
23	Do the advisers develop teaching materials?						
24	Do the advisers have popular academic papers?						
25	Do the teachers have <i>PTK</i> results?						

In the implementation of supervision, some reports such as collaboration reports, home visit reports, presentation reports of students, and monthly reports, must be prepared. However, only SMPN 25 Surabaya and SMPN 26 Surabaya drafted collaboration reports. Only SMPN 20 Surabaya and SMPN 25 Surabaya prepared home visit reports. Only SMPN 26 Surabaya prepared case conference reports and only SMPN 20 Surabaya has a list of foster students, a number of foster students, reports on attendance of students and follow-up reports, students with problems, and achiever students. All schools should have reports related to their students, such as reports of students with problems and achievers. These reports can be used to analyze the characteristics of students so that guidance and counseling teachers know which students need help. Only SMPN 20 Surabaya and SMPN 25 Surabaya prepared monthly reports.

Every school should have data on students in detail. However, in this research, only SMPN 25 Surabaya has this data. Moreover, only SMPN 26 Surabaya has communication cards and sociometry.

A table of supervision scores of guidance and counseling teachers is available in SMPN 20 Surabaya, SMPN 25 Surabaya, SMPN 26 Surabaya, and SMPN 28 Surabaya. There is also scoring of total scores of aspects that are observed by the principals as monitoring agents. Each aspect has scores of 1, 2, 3, 4, and 5 where 1= very low, 2 = low, 3 = enough, 4 = good, and 5 = very good. The table shows that the highest score is achieved by AH from SMPN 26 Surabaya. Three teachers, AW, DRP, and ES, from SMPN 20 Surabaya obtained 88 scores. There is a teacher, i.e. YR, at SMPN 25 Surabaya who obtained 87.3 scores. Two teachers, i.e., AS and ADD, at SMPN 28 Surabaya obtained 84 scores.

From the data, it can be seen that the performance of guidance and counseling teachers has not been suitable yet for the competence standard of counselors as stated in the Minister of National Education No. 27 the Year 2008 about the Standard of Academic Qualification and Counsellor Competence. In the regulation, it is stated that a guidance and counseling teacher must have academic competence which supports his or her professionalism. One of the competence standards states that the teacher must deeply understand the character of his or her students, and he or she must provide guidance and counseling to the students in such a way that the students become independent. Since there is a finding in which the school does not make Enquete of the student's needs, it makes the guidance and counseling teachers unaware of the need of the students.

## 4 CONCLUSION AND SUGGESTION

### A. Conclusion

Based on the discussion above, it can be seen that the performance of the guidance and counseling teachers at SMPN 20, SMPN 25, SMPN 26, and SMPN 28 in West Surabaya has an average score of 87.69. It means that the performance of the teachers is good enough. However, the score can be increased significantly if the teachers give attention to the data collection and do their job suitably with the competence standard of counselors. It is expected that the supervision activities give a good impact on the performance of the guidance and counseling teachers.

### B. Suggestion

In this paper, it can be suggested that the performance of the guidance and counseling teachers at these schools needs to be improved such that it can be fulfilled the competence standard, as stated in the Minister of National Education RI No. 27 in the year 2008. Moreover, training related to guidance and counseling services is imperative to be conducted for guidance and counseling teachers. Aspects of supervision to guidance and counseling teachers should be fulfilled.

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# Sport's program implementation among state universities and colleges as input for a proposed sports development manual

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**ABSTRACT:** State universities and colleges (SUCs) have implemented sports programs in the belief that the implemented activities of these sports programs encourage and develop students holistically. Thus, in this study, sports program implementation in BISCASST is described and evaluated to craft a sports manual that addresses the problems and challenges in its execution. The BISCASST Sports Manual, which covers the implementing rules and regulations as well as the guidelines of any sports activity, can serve as a bible for every stakeholder in the community. The study adopted a mixed methodology research. Results revealed that SUCs in the Bicol Region are implementing sports program, focusing their initiatives on athletes' support, sports foundation, and participation. Furthermore, the majority of the respondents have similar problems along the way, which need to be addressed through a concrete policy with regard to the student's time management, teachers' loads, and lack of or insufficient facilities and equipment. Thus, it is recommended that SUCs should initiate the development of a concrete sports manual as the standard tool or basis for different themes in sports participation and management. This manual emanates sports engagement among coaches, students, and athletes that serves as an avenue for values formation, communication, and entrepreneurial spirit to generate production by not depending on government-downloaded funds. SUCs should create well-supported and nurtured coaches and trainers that are well-motivated to create, innovate, and share expertise aside from their usual instruction.

## 1 INTRODUCTION

Members of educational institutions should develop strategically sustainable sports management activities that will empower and motivate their constituents to accomplish institutional priorities and bring inefficient and productive leadership in sports management. Since different scenarios involve different tactics, there is no single or traditional practice for a great sports leader. The more serious the difficulty in the conduct of the sports program, the greater the need for proven sports activities and policies.

As demonstrated in many nations, good management and leadership in sport are a core drivers of the nation's sustainable aim of winning gold in regional or global sporting competitions. The International Olympic Committee stressed that the governments of each member state should support the financial needs of sports, provide sports equipment and resources, adequately train sports leaders, such as coaches and officials, and help create a school-based sports curriculum. Recognizing the mission of the International Olympic Committee to develop world-class athletes, the government of the Philippines focuses on creating a sports program from grassroots to higher learning institutions. Section 17 of Article II of the 1987 Philippine Constitution underlines that "the State shall give priority to education, science, and technology, the arts, culture, and sport to foster patriotism and

nationalism, to accelerate social progress, and to promote total human liberation and development”.

Furthermore, research in sports conforms with the country’s desire to provide students with the quality of education only academic institutions can provide. Sports activities contribute to the holistic development of students and contribute to the success of education management within the institution; thus, the current research study falls into the priority area of education management of the CHED’s National Higher Education Research Agenda 2.

The study adopted a mixed methodology research. In its first phase, the study employed the descriptive-evaluative approach using a survey design, which aimed to describe and evaluate the sports programs in Region V SUCs. A subsequent phase (qualitative) is then designed to confirm and cross-validate the findings of the initial phase of the study. The research methods employed in this study are the survey method and key informant interviews. Quantitative data was analyzed using frequency distribution, mean, and standard deviation, while thematic analysis of qualitative data will be employed.

The survey populations of the study were the sports directors and coaches/faculty, and trainers from different state universities and colleges in Region V. The survey instrument used in this study was a researcher-made questionnaire in which some questions were adopted from the conduct of national sports program evaluation using the SPLISS model, which focused mainly on the implementation of sports programs by the different sports managers, leaders, and faculty of the different universities and colleges. The researcher-constructed questionnaire was presented to the experts panel for comments, suggestions, and improvement of the questionnaire’s content. After validation, the necessary revision was incorporated. The researcher administered the questionnaire to ten respondents who were not actual respondents of the study to determine the quality of the questionnaire both in terms of content and comprehensibility. An item analysis was conducted using Cronbach’s () Alpha to test the instrument’s reliability. In addition, in the conduct of the study, necessary permission from the state universities and colleges will be ensured. At the same time, informed consent was attached to each survey instrument to inform the respondents of the study’s objectives and ask their permission to participate in results and discussions.

## 1.1 *Profile of sports program of selected state universities and colleges in Bicol*

### 1.1.1 *Goals and objectives*

All of the SUCs promote sports participation and sports development as stated in Article XIV, Section 19 of the 1987 Philippine Constitution, which provides that “the State shall promote physical education and encourage sports programs, league competitions, and amateur sports, including training for international competitions, to foster self-discipline, teamwork, and excellence for the development of a healthy and alert citizenry.” The goals and objectives of the sport’s development unit are anchored to the mission and vision of the Philippine Sports Commission, in which sports promotion

### 1.1.2 *Programs, projects, and activities*

The selected SUCs organizes sports activities such as intramural or interschool recreational purposes with activities such as basketball, baseball, football, soccer, track, or any other competitive sport to promote sports awareness among their stakeholders.

### 1.1.3 *Organizational structure*

The SUCs system has a sports organizational structure that outlines how the different sports activities pertain to the delivery of the sports program. SUCs have different sports organizational structures; some are under the Office of Student Affairs and some are directly under the Office of the President down to the Vice President for Academic Affairs.



## 1.2 Implementation of sports program

The sports program is a SUC program that is organized for physical education activities, and intramural or interschool recreational purposes, with activities that include basketball, baseball, football, soccer, track, or any other competitive sport. In the study, the implementation of the sports program of selected SUCs in the Bicol region is investigated along with its financial support, integrated approach to policy development, foundation and participation, talent identification and development system, athlete support, training facilities, coaching provision and coach development, competition, and scientific research. Table 1 shows the evaluation results for each parameter.

Table 1. Sports program evaluation results of selected SUCs in the Bicol region along with financial support.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
The budget for the sports program for the facility, quality of equipment, hiring of referees and umpires, cost of uniforms, food, and other sports program expenses is given.	4.40	4.40	4.50	4.40	3.90	4.32	A

### 1.2.1 Financial support

Table 1 presents the sports program evaluation results of selected SUCs in the Bicol Region along with financial support. Based on the results, SUCs “always” provide a budget for the sports program for the facility, quality of equipment, hiring of referees and umpires, cost of uniforms, food, and other sports program expenses with a mean value of 4.32, which indicates that SUCs have provided financial support for sports program implementation. The SUCs also confirmed that the budget for sports comes from the athletic fee and SCUAA fee paid by the students in their matriculation. However, the budget for sports programs is not reflected in the student manual. In addition to the athletic fee and SCUAA fee, another budget comes from the support of the student body or the PTA per college/department, and the college or university administration provides additional funds for sports programs. Furthermore, some colleges provide budgets for sports through the Student Development Services Office, which allocates budgets for sports activities for each college.

### 1.2.2 Policy development

Table 2 presents the sports program evaluation results of selected SUCs in the Bicol region along with the policy development. The results indicate that SUCs’ implementation of sports programs is guided by a holistic manual of operation and management that includes competition and participation (4.42), creates rules and policies based on the atmosphere of the leagues, modifies rules if there are facility constraints (4.20), and conducts intensive planning to have a comprehensive sports program (4.16). The sports policy is a formal, systematic, and holistic guideline that must be followed in the different sports activities. This is a must in all SUCs to strengthen the promotion of sports development. However, despite its importance based on the results, not all SUC respondents have a clear and published sports policy manual. Furthermore, in comparing the student manuals of each SUC, it was found that state colleges don’t have their own separate sports development unit and offices from the cultural unit or office. This means that in some SUCs, culture and sports departments are managed by a single person.

Table 2. Sports program evaluation results of selected SUCs in the Bicol region along with policy development.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
1. Guided by a holistic manual of operation and management that includes competition and participation.	4.40	4.50	4.50	4.70	3.50	4.42	A
2. It creates rules and policies based on the atmosphere of the leagues and modifies rules if there are facility constraints.	4.00	4.40	4.10	4.60	3.90	4.20	A
3. Conducts intensive planning to have a comprehensive sports program.	4.40	4.10	4.30	4.40	3.60	4.16	M
Average	4.27	4.33	4.30	4.57	3.67	4.26	A

### 1.2.3 Sports foundation and participation

Table 3 presents the sports program evaluation results of selected SUCs in the Bicol Region, along with sports foundation and participation. All SUCs promote sports participation through the organization, departmental or institutional intramurals, and other physical activity advocacy (4.70); participation in all sports activities and programs is open to all students (4.34); communicates a clear (4.34) and compelling promotion; and orients students about the codes of conduct, such as setting behavioral expectations for coaches, players, and parents to minimize or eliminate emotionally, physically, or sexually abusive behavior. It indicates that sports programs are organized not only to promote sports but also to integrate good morals and attitudes. In addition, SUCs also advocate for inclusive education, which means that regardless of age, gender, race, and religion, students are given equal opportunities to participate in sports programs, events, and activities.

Table 3. Sports program evaluation results of selected Bicol SUCs, as well as foundation and participation.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
1. Promotes sports participation through the organization, departmental or institutional intramurals, and other physical activity advocacy.	4.80	4.70	4.90	4.80	4.30	4.70	A
2. Participation in all sports activities and programs is open to all students.	4.40	4.40	4.30	4.60	4.00	4.34	A
3. Communicates a clear and compelling promotion and brings out sports participation advocacy.	4.40	4.60	4.40	4.70	4.00	4.42	A
4. Orients about the codes of conduct such as setting the behavioral expectations for coaches, players, and parents to minimize or eliminate emotionally, physically, or sexually abusive conduct (bullying, hazing, teasing, yelling)	4.50	4.50	4.60	4.70	3.50	4.36	A
Average	4.53	4.55	4.55	4.70	3.95	4.46	A

### 1.2.4 Talent identification and development

Table 4 presents the sports program evaluation results of selected SUCs in the Bicol region along with talent identification and development. Based on the evaluation results, it shows that SUC respondents have a clear policy on talent identification and recruitment of student-athletes, which garnered a 4.52 mean rating. All of the selected SUCs have different schemes for choosing their athletes or participants in sports programs. During the summer, some coaches made home visits to their prospective athletes who had recently graduated from various public and private secondary schools. Some big universities conducted departmental or college intramurals before the university intramural as a way of selecting an athlete. SUCs also focus on implementing sports programs that develop more than skills and character; they emphasize teamwork, cooperation, good values, and leadership, which is reflected by the highest mean rating of 4.56 under the talent segment.

Table 4. Sports program evaluation results of selected SUCs in the Bicol region along with talent identification and development.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
1. Schedules regular meetings with each head coach/trainer to update goals and create training cycles.	4.30	4.30	4.40	4.60	3.90	4.30	A
2. It develops more than skills and character; it emphasizes teamwork, cooperation, good values, and leadership.	4.60	4.70	4.60	4.60	4.30	4.56	A
3. It sets sensible limits on the number of practices and games per week.	4.10	4.30	4.40	4.70	4.10	4.32	A
4. Adapts an individualized approach to development, such as the Test-Teach-Train methodology, to develop endurance among athletes.	4.10	4.30	4.70	4.40	4.00	4.30	A
5. Trains for movement-specific skills such as power development, greater dynamic flexibility, improved core strength, balance, and flexibility of the hip musculature.	4.60	4.60	4.60	4.50	3.90	4.44	A
6. It has a clear policy on talent identification and recruitment of student athletes.	4.60	4.40	4.70	4.70	4.20	4.52	A
Average	4.38	4.43	4.57	4.58	4.07	4.41	A

### 1.2.5 Athlete support

Table 5 presents the sports program evaluation results of selected SUCs in the Bicol Region along with athlete support.

Based on the result, SUCs recognize the protection of student-athletes, such as identifying best health and safety practices such as training on first aid (4.14); emphasizing having fun, skill development, fair play, and keep winning, losing, and competition in proper perspective (4.72). In addition, the institution has a coordinated support program for athletes (apart from financial support), including career coaching, legal advice, media training, coaching support, training and competition support, sports science support, and sports medicine support (4.56).

The results indicate that SUCs have oriented and trained their athletes on the basic preparatory training of the different sports programs and incorporated some important values

Table 5. Sports program evaluation results of selected SUCs in the Bicol region with athlete support.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
1. Recognizes the protection of students-athletes, such as identifying best health and safety practices such as training on first aid.	3.80	4.40	4.30	4.30	3.90	4.14	M
2. It emphasizes having fun, skill development, fair play, and keeps winning, losing, and competing in proper perspective.	4.60	4.80	5.00	4.80	4.40	4.72	A
3. The institution has a coordinated support program for athletes; training and competition support; sports science support; sports medicine support.	4.60	4.70	4.60	4.60	4.30	4.56	A
Average	4.33	4.63	4.63	4.57	4.20	4.47	A

such as playing not only to win but also for enjoyment; ensuring fairness for the entire game; and always stressing that losing is an opportunity to win.

#### 1.2.6 Facilities and equipment

Table 6 presents the sports program evaluation results of selected SUCs in the Bicol Region along with facilities and equipment. Sports facilities play a vital role in contributing to the development of an athlete's skills and competency in the sport he/she is in. In the current study, the results showed that SUCs most of the time ensure that facilities and equipment are regularly monitored and evaluated in terms of usability (4.04) and provide equipment that assists in the measurement of power to assess progress and optimize training (4.26). This result indicates that SUCs in the Bicol region provided the necessary sports facilities, materials, and equipment for the implementation of sports programs. Despite the importance of these sports facilities in the development of an athlete's performance, most SUCs are still limited in their ability to ensure the maintenance of the said.

Table 6. Sports program evaluation results of selected SUCs in the Bicol region along with facilities and equipment.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
1. Ensures that facilities and equipment are regularly monitored and evaluated in terms of usability.	3.80	3.90	4.00	4.60	3.90	4.04	M
2. It provides equipment that assists in the measurement of power to assess progress and optimize training.	3.90	4.20	4.40	4.60	4.20	4.26	A
Average	3.85	4.05	4.20	4.60	4.05	4.15	M

#### 1.2.7 Coaching provision and coach development

Table 7 presents the sports program evaluation results of selected SUCs in the Bicol region, along with coaching provision and coach development. Based on the evaluation results, SUCs encourage coaches and trainers to attend seminars/training to update their

competency about trends and approaches such as goal-based conditioning program delivery and implement monitoring and evaluation among coaches and trainers/athletes to validate planned and progressive sequences or activities among athletes and ensure sports goals are achieved most of the time, with a mean of 4.12 and 4.04, respectively.

These results indicate that SUCs encourage coaches and trainers to attend seminars, training, and other professional development activities to deliver an optimal training program for the student-athletes. On the other hand, it is very important to monitor and evaluate the coaches, trainers, and athletes of the different sports activities to validate the planned and progressive sequence of the activities. However, based on the results, there is a need for comprehensive monitoring and evaluation of all trainers/coaches and athletes, as well as the sports facilities and equipment. This is to validate the planned and progressive sequence of activities to ensure the attainability of the goal of the sports and to assess the usability of the different facilities and equipment. However, the SUCs seem to neglect the importance of monitoring and evaluation, which can be reflected in the result that it has the lowest average mean.

Table 7. Sports program evaluation results of selected SUCs in the Bicol region along with coaching provision and coach development.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
1. It encourages coaches and trainers to attend seminars and training to stay current on trends and approaches such as goal-based conditioning program delivery	4.10	4.50	4.10	4.40	3.50	4.12	M
2. It implements monitoring and evaluation among coaches and athletes to validate planned and progressive sequences or activities among athletes and ensure sports goals are achieved.	4.10	3.80	4.30	4.30	3.70	4.04	M
Average	4.10	4.15	4.20	4.35	3.60	4.08	M

### 1.2.8 Competition

Table 8 presents the sports program evaluation results of selected SUCs in the Bicol Region along with competition. based on the data, SUCs encourage early registration in the organization of league tournaments with a mean of 4.02 and integrate sports communication and

Table 8. Sports program evaluation results of selected SUCs in the Bicol region along with competition.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
1. It encourages early registration in the organization of league tournaments.	4.10	4.30	4.00	4.50	3.20	4.02	M
2. This combines sports communication and media to increase league competition and organization on and off campus	3.90	4.00	3.80	4.70	3.60	4.00	M
3. It implements a clear policy framework in the competition.	4.40	4.50	4.00	4.40	3.90	4.24	A
Average	4.13	4.27	3.93	4.53	3.57	4.09	M

media to intensify league competition organization in and off campus with a mean of 4.00, which were both interpreted as most of the time. Meanwhile, SUCs “always” implement a clear policy framework in the competition with a mean of 4.24.

These results indicate that SUCs have also joined and participated in different league tournaments. However, there were factors affecting their participation in the organization of league tournaments as revealed by one of the respondents, such as insufficient funds and a lack of coaches or trainers that would handle the athletes. Sometimes they have solicited from stakeholders for them to be able to participate in the league tournament.

### 1.2.9 Scientific research

Table 9 presents the sports program evaluation results of selected SUCs in the Bicol region along with scientific research. Research is one of the functions of a higher education institution (HEI) similar to SUCs. Based on the data gathered, SUCs inspire training programs based on research and commitment to sports science principles and integrate scientific-based analysis and data in developing sports training programs and activities with a mean of 4.14 and 4.00, which were both verbally interpreted most of the time. This result indicates that SUCs implement sports training programs that are analyzed by experts and consider health and science aspects. Furthermore, SUCs are mandated to implement research-based programs of which sports are a part.

Table 9. Sports program evaluation results of selected SUCs in the Bicol region through scientific research.

Indicators	SUCs					Over-all	
	A	B	C	D	E	m	I
1. Inspires training program by research and commitment to sports science principles.	4.00	4.10	4.30	4.60	3.70	4.14	M
2. Integrates scientific-based analysis and data in developing sports training programs and activities.	3.40	4.40	4.20	4.10	3.90	4.00	M
Average	3.70	4.25	4.25	4.35	3.80	4.07	M

Table 10 shows the summary of sports program evaluation results of selected SUCs in the Bicol region. As presented, athlete support ranks first with an over-all mean of 4.47, verbally interpreted as “always”. Next is the sports program foundation and participation, with an

Table 10. Summary of sports program evaluation results of selected SUCs in the Bicol region.

Parameters	SUCs					Over-all		Rank
	A	B	C	D	E	m	I	
a. Financial Support	4.40	4.40	4.50	4.40	3.90	4.32	A	4
b. Policy Development	4.27	4.33	4.30	4.57	3.67	4.26	A	5
c. Foundation and Participation	4.53	4.55	4.55	4.70	3.95	4.46	A	2
d. Talent Identification and Development	4.38	4.43	4.57	4.58	4.07	4.41	A	3
e. Athlete Support	4.33	4.63	4.63	4.57	4.20	4.47	A	1
f. Facilities and Equipment	3.85	4.05	4.20	4.60	4.05	4.15	M	6
g. Coaching provision and coach development	4.10	4.15	4.20	4.35	3.60	4.08	M	8
h. Competition	4.13	4.27	3.93	4.53	3.57	4.09	M	7
i. Scientific Research	3.70	4.25	4.25	4.35	3.80	4.07	M	9
Average weighted mean	4.19	4.34	4.35	4.52	3.87	4.26	A	

over-all mean of 4.46, which is verbally interpreted as “always”. Meanwhile, scientific research has the lowest rating of 4.07, which is verbally interpreted as “most of the time”. On the other hand, when comparing the evaluation results among SUCs, SUC D has the highest rating with an average weighted mean of 4.52. Meanwhile, SUC E has the lowest, with an average weighted mean of 3.87.

These results indicate that SUCs in the Bicol Region are implementing the sports program, focusing their initiatives on athlete support and sports foundation and participation. As you can observe, the variation of the means is small, which indicates that SUCs’ implementation of sports programs is quite similar to each other. They might just have different provisions and budgets due to their sizes, demographic profiles, and populations.

### 1.3 *Problems and challenges encountered in the implementation of the sports program*

A range of different problems and challenges needs to be addressed for successful program implementation. The problems and challenges encountered in the implementation of sports programs in the selected SUCs in the Bicol region are identified and presented in Figure 1. Based on the data gathered, SUCs have no sports manual yet, making them the first in rank. Next, they have insufficient facilities and equipment. The other problems and challenges encountered are the students’ time management, teacher-coach load, and the athlete’s attitude.

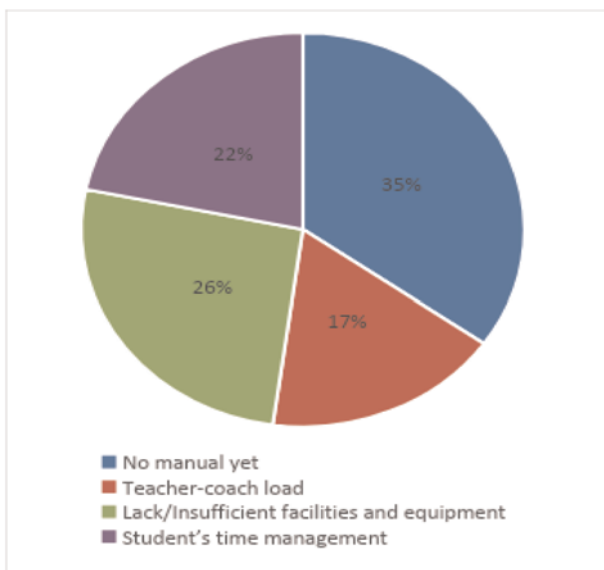


Figure 1. Major problems and challenges encountered in the implementation of the sports program.

The sports policy is a formal, systematic, and holistic guideline that must be followed in the different sports activities. This is a must in all SUCs to strengthen the promotion of sports development. However, despite its importance based on the results, each SUC respondent doesn’t have a clear and published sports policy. In addition, the results indicate that despite the financial support provided by the SUC administration, there is still a lack of sports facilities and equipment.

Despite the privileges of being a student-athlete, it is still a challenge for student-athletes to maintain a balance between academic and extracurricular matters, just like joining sports training and activities. To address this, some colleges and universities exempt

student-athletes from taking their PE classes. Exemptions in PE classes are only internal arrangements between the PE instructor and the student-athlete. This is because college athletes face more demanding schedules than the average student. They must combine education, homework, social life, and sports—everything that a typical student must do and more. On the contrary, multiple discussions suggest that varsity players or student-athletes need not be excused from gym or PE courses. PE is a mandatory class for all students.

One of the benefits of being a coach or a trainer is attending different seminars and training that enhance professional knowledge and skills of being a coach or a trainer. However, attending this training is also expensive and time-consuming. Attendance at these training sessions means shouldering the expenses and payment will only be given over time. Aside from attending every related sports event, various documents should be submitted.

#### 1.4 *Proposal for a sports manual*

A manual is referred to as a book of instructions or sets of policies. From the findings of this study, the BISCASST Sports Program Implementation Manual was crafted. The proposed sports manual is crafted, focusing on policies addressing the current problems and challenges encountered in implementing sports programs. The sports manual outlines the objectives of the Sports Development Program, sports programs offered, and policies and procedures

## 2 CONCLUSION AND RECOMMENDATIONS

Based on the study's findings, it is concluded that SUCs implemented sports programs that heavily promote support for student-athletes, sports foundations, and active participation. In addition, SUC sports programs are implemented to develop the students holistically, not just their skills but also their behavior and morals. Furthermore, the majority of the respondents have similar problems along the way, which needs to be addressed through a concrete policy with regard to the student's time management, teacher's loads, and lack of or insufficient facilities and equipment.

In conclusion, it is recommended that SUCs should initiate the development of a concrete sports manual as the standard tool or basis for different themes in sports participation and management as well. This manual emanates sports engagement among coaches, students, and athletes that serves as an avenue for values formation, communication, and entrepreneurial spirit to generate production by not depending on the government download fund. SUCs should create well-supported and nurtured coaches and trainers for them to be motivated to create, innovate, and share expertise aside from their usual instruction. Very satisfied coaches/trainers can value their tasks and work if they find it worthwhile to satisfy their needs based on the theory of Maslow. Coaches and trainers form part of the human capital of the SUC.

The study has several strengths, one of which is the use of mixed methods of research and the use of the SPLISS model in evaluating the sports program implementation of each SUC involved in the study. Furthermore, the study included various stakeholders from each SUC's sports program implementation. However, the study also has its limitations. The study was conducted only within the Bicol region and external stakeholders like government partners and community partners were not involved in the study.

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## Application of problem-based learning of PAUD learning strategy courses to support the independent learning program

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**ABSTRACT:** It is expected that the student learning process will foster independence in seeking and discovering knowledge through real-life experiences and field dynamics. One model that is considered capable of being a solution to achieving learning objectives is Problem-Based Learning (PBL). In the PBL model, students interact with learning problems that exist in the field, and they analyze and search for possible solutions to the problem. The proposed problem-solving is then made into a plan for improving existing learning. The purpose of this study is to describe the application of problem-based learning in PAUD learning strategy courses in order to support the independent learning program implemented by the State University of Surabaya. The research method uses a survey, with the research stages consisting of an analysis of the problem situation (case), determining the core question (what is the central question), the benefits of the question (what do we already know about this question), and what we need to seek (what do we know about this question). We need to find out what is required in independent learning (self-study), discussion and report, and application of problem-solving (applying our outcome). The target research TKT is TKT 3 proof of concept application of problem-based learning in PAUD learning strategy courses in support of the independent learning program.

### 1 INTRODUCTION

The Independent Learning Program-Merdeka Campus is expected to be able to meet the challenges of higher education to produce graduates according to the times, advances in science and technology, the demands of the business and industrial world, as well as the dynamics of society. Universities must be able to use new ways of learning so that students can achieve three learning outcomes that cover knowledge, attitudes, and skills in their relevant field in the best way possible. It is hoped that the independent learning policy will lead to learning that is self-directed and flexible so that students can learn in ways that are new, not constrained, and fit their needs.

In higher education, the student-centered learning process is essential to implement in every subject. One of them is in the PAUD learning strategy course, which aims to prepare students to become prospective teachers who have professional teaching skills according to the demands of the business world. A learning strategy is one of the subjects that must be implemented by PAUD PG students. Some of its criteria are teaching skills and learning methods, both of which are interrelated in practice. The concept of teaching skills consists of eight special skills that must be possessed by prospective PAUD teachers, while the learning method is a way of delivering instructions to students in the learning process (Maulidiyah 2017). The target of student achievement in this material is that students are able to

understand the concept of teaching skills and learning methods in PAUD institutions, and analyze and find solutions to problems that occur in learning at the early childhood education level.

In order to support the concept of independent learning, in this course, the student learning process is expected to develop independence in seeking and finding knowledge through reality and field dynamics. Learning methods in lecture activities have been carried out in classical form and using the lecture method has not been able to fulfill the intended concept of independent learning. Based on this, learning innovations are needed that can support students to be independent and responsible.

Problem-Based Learning (PBL) is a model that is thought to be able to help students meet their learning goals. Students in the PBL model are given real-world problems to solve (De Graaf & Kolmos 2003; Hung et al. 2008). The problems found are then analyzed and searched for possible solutions to the problems. The proposed problem-solving is then made into a plan for improving existing learning. Based on this explanation, the problem this study is trying to solve is how to use the problem-based learning model in PAUD learning strategy courses to help the State University of Surabaya's program for independent learning. The goal of this research is to find out what happens when problem-based learning is used in PAUD learning strategy courses. This is to help the State University of Surabaya's program for independent learning.

The learning innovation that will be done should also be able to support Surabaya State University 7's main performance indicators (IKU), which are collaborative and innovative classes. Another achievement is that the results of this study are expected to support additional performance indicators (IKT) of Surabaya State University quality standards, including educational standards with performance indicators such as the percentage of courses in the study program that are in accordance with SKL/CPL and oriented to 21st-century competence and performance indicators of the percentage of study programs that have courses whose material integrates research results and PKM.

### 1.1 *Problem based learning*

Problem-based learning (PBL), a way of learning, is used in learning strategy classes. The goal is to teach students how to solve problems by giving them real-world experience. PBL as a learning model confronts students with the challenge of "learning to learn". Students collaborate to find solutions to life's problems. Students can use those problems as a guide to write, analyze, and solve their own problems (Allen et al. 2011; Barrows 1983; De Graaf & Kolmos 2003; Hung et al. 2008; Schwartz 2013). In practice, students are faced with authentic and meaningful problem situations. It is hoped that this might provoke them to carry out investigations.

Some of the objectives of PBL used in learning are: developing thinking and problem-solving skills; learning roles through involvement in real experiences or simulations; and most importantly, students becoming autonomous and independent learners. PBL begins with introducing students to problem situations and ends with the presentation and analysis of work results (De Graaf & Kolmos 2003). De G2003; Kolmos 2003). PBL starts by giving students problems to solve and ends with a presentation and analysis of their work (De Graaf & Kolmos 2003). The problems encountered in learning can vary according to the learning objectives. The syntax or stages of PBL consists of student orientation to problems, organizing students to learn, guiding individual and group investigations, developing and presenting work, as well as analyzing and evaluating problem-solving processes independently, explaining skills, questioning skills, using a variety of skills, strengthening skills, classroom management skills, small group and individual teaching skills, and facilitating small group discussions (Maulidiyah 2017).

Opening skills are carried out at the time of starting learning activities for one day. For students to learn how to start lessons, the teacher should give them engaging, meaningful

activities and get them ready to take part in the day's main activities. At PAUD institutions, the first lessons focus on how ready the child is mentally, emotionally, and physically. Closing skills are skills that are needed when the teacher ends a series of activities that have been carried out. Closing can also be interpreted as closing, meaning that at the end of learning activities, what has been done together for one day will usually be reviewed. How well a teacher can explain something is related to how well they can teach the material. To be good at explaining, you need to be mature, know what you're talking about, and understand how your students feel.

Stimulus variation skills are important and should be learned. These skills include doing different and interesting activities that will make children interested in what they are doing so that they can actively learn. Learning skills involve a range of strategies to stimulate children's understanding of the subject material, both before and after the activity.

Advanced questioning skills are skills that function to explore the material in more depth. Therefore, follow-up questions can also be asked for more information about what was said in a broad, general way. The learning innovation that will be done should also be able to support Surabaya State University 7's main performance indicators (IKU), which are collaborative and innovative classes in encountered and comprehensive manner. Giving out awards does not seem out of the question. Small group discussion skills in early childhood education learning can be done when children are gathered in certain areas according to their interests and talents. This means that in one class, children will be divided into several groups that are adapted to different interests and activities.

Children's management skills are very important so that learning plans can be carried out according to the goals of learning. Teachers who already have the ability to manage classes will make learning easy, active, dynamic, and fun, not only for teachers but also for children.

## 1.2 *Problem-based learning*

The learning method is the method used by the teacher in delivering learning material (Ardiana et al. 2021; Yamin 2021). Various learning methods in PAUD are based on Permendikbud No. 146 of 2014. In Appendix 4, which is part of the 2013 PAUD curriculum, there was a list of different ways to learn, including storytelling. It is described as telling stories both of real and unreal events in a way of speaking that emphasizes oral narrative material more than other technological aspects. Storytelling helps children learn to be good people, develops their imaginations and powers of fantasy, helps them to develop reasoning skills and critical and creative attitudes, improves their language communication skills and emotional closeness, broadens their horizons, and helps them adapt to their surroundings.

Demonstrations are used to show how to perform something. The benefit of the demonstration method is that children learn through direct experience, learning is more focused, and children can easily achieve learning goals. Conversation can be done in the form of questions and answers between children and educators, or between children and other children. When using the conversational method, it is very important to ask the child questions about his or her life.

Assignments are carried out by educators to provide real-world experiences to children, both individually and in groups. The assignment is aimed at developing children's abilities optimally. Assignments in early childhood education are not paper and pencil oriented. Socio-drama or role-playing is a way to help kids develop their imagination, ability to express themselves, and creativity by using the characters or objects in a story as ideas. Field trips are direct visits to objects in the child's living environment that are in accordance with the discussed theme. The goal of the field trip method is contextual learning, which means that learning is done through real-world experience. A project is a task that is given to children by teachers and is made up of a series of activities that can be done alone or with a group. These activities can be done with everyday things or with natural things. Children get real-world experience when they do experiments themselves and watch what happens.

The advantages of this method are that children can do directly what they learn, for instance, by doing something. Disadvantages are that this method also tends to require experimental tools. In addition, the teacher must pay attention to each child in carrying out their experiments (Moust et al. 2021).

By the end of the lesson, students should be able to do this. The final competence is then turned into signs that the student has learned what they were supposed to learn. The indicator is used as a guide in measuring the achievement of the student's final competency on the test sheet at the end of the lesson.

## 2 METHOD

This study uses a quantitative survey research design with the aim of knowing the impact of implementing problem-based learning needs in independent learning (self-study), discussion and report, and application of problem-solving (apply our outcome) (Moust et al. 2021). The chart from PBL is shown below:

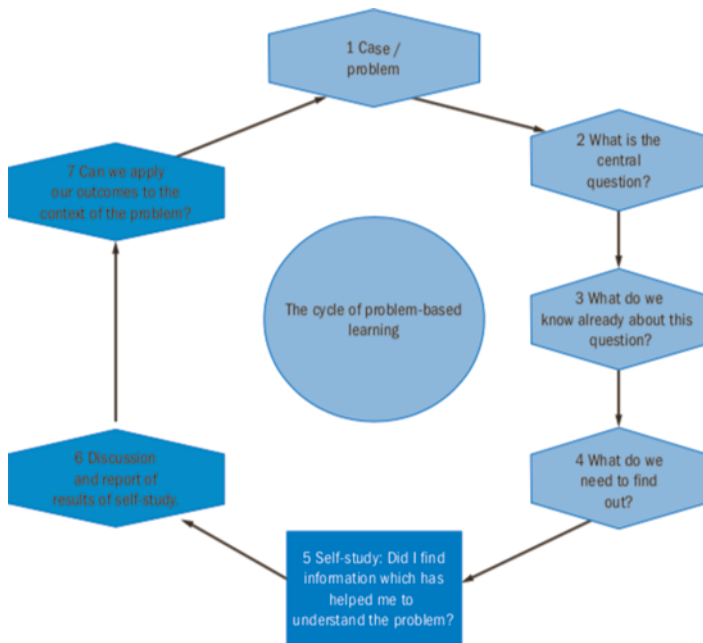


Chart 1. Problem-based learning research.

## 3 RESULT AND DISCUSSION

Stages of problem-based learning in the learning strategy course have been carried out from stage 1 to stage 7. In stage 1, the lecturer conveyed several problems related to learning. Such problems include: the teacher has not implemented learning in accordance with the early childhood learning approach; the media is not appropriate; the learning method is monotonous; the teacher has not used varied learning methods and appropriate activities. Stage 2 students look for one of the most important problems to study, that is, the use of variations in learning methods. In stage 3, students and lecturers formulate the benefits for students. Students as agents of change who later act as prospective teachers are expected to be able to

innovate learning to suit the early childhood learning approach. Students must have teaching experience with careful preparation so that they will be ready for the community. Stage 4 formulate important things that must be found by students as the basis for the next stage. Students and lecturers formulate important things that are discussed through self-study, namely studying appropriate materials such as teaching skills and learning methods. Students also formulate problems and solutions that must be found as problem-solving. In Stage 5, students carry out self-study of self-study material, and analyze and find solutions to problems to be presented.

In Stage 6, students present the results of the discussion. The selection of discussion presentations was carried out randomly by the lecturer. This technique is used so that all group members are ready for presentations and understand the material individually. It is proven that with this technique many students participate in the problem-solving discussion process after the presentation is carried out. At Stage 6, apart from students presenting presentations and conducting discussions, lecturers also provide assistance to direct students to the final stage of the problem-based learning series, namely problem-solving through products. Before going to stage 7, students do a mastery test of the material with the help of a Google form.

The test results help in collecting each individual's learning outcomes. The question uses the indicators that have been set at the beginning, which include teaching skills material and learning methods with a total of 10 indicators. The 10 indicators are translated into 25 questions based on the difficulty level of the questions. The next stage is that the questions are validated by the department quality assurance unit team to check their suitability with the final learning outcomes of the PG PAUD department.

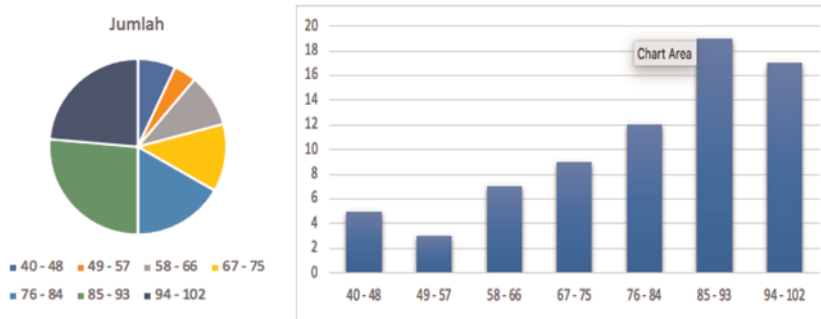


Chart 2.

The results of the validation show that the questions are feasible to use to measure the final learning outcomes after using problem-based learning in learning strategy courses. The results of the final assessment are shown through bar charts and pie charts with seven groups of data. The first group consists of five students with a score range of 40–48 or 7% of the total students. The second group consists of three students with a score range of 49–57 or 4% of the total students. The third group consisted of seven students with a score range of 58–66 or 10% of the total students. The fourth group consisted of nine students with a score range of 67–75 or 13% of the total students. The fifth group has 12 students with a score range of 76–84 or 17% of the total students. The sixth group has 19 students with a score range of 85–93 or 26% of the total students. The seventh group has 17 students with a score range of 94–102 or 24% of the total students. The total number of students who attended lectures until the final assessment based on data was 72 students.

The data that has been collected is then compared with the minimum value of achieving student learning outcomes that have been determined and made in the conversion of learning assessments. Grade A is a very good category, where the score is of 85 and above, from a

total of 36 students. Grade B is good category ranging from 76–84 with as many as 12 students. Grade C is in the sufficient category with a value range of 67–75 with as many as 9 students. Grade D is in the less category with a score below 67 with as many as 15 students. The conversion value data on the assessment of mastery of the material concluded that a number of 15 students did not understand the teaching skills material and learning methods appropriately.

The next step is to analyze multiple-choice answers through an analysis of the selected answers and discussions with students. The results of the analysis concluded that there were many errors in student answers because students did not focus enough on the correct answer sentences. Answer errors indicate that the answer selected is similar to the correct answer. When discussing answers with students, it was observed that they did not understand the correct answers to questions, mostly due to being misled by other similar answers.

After analyzing multiple-choice answers at stage 7, students implement the problem-solving plan. At this stage, students are able to apply the results of problem-solving into a new learning design that includes the practice of teaching skills concepts, and learning methods. At this stage, students produce two products, namely learning planning documents and learning implementation videos. The results of the analysis of the learning planning document are used to see the variation in the learning methods used and the relationship between the activities and the supporting media. The product results show that students have used learning methods that are in accordance with the themes and activities to be carried out. For example, the field trip method was used by students with animal themes using activities to visit the Surabaya Zoo. In the lesson plan, it is also stated that before using the field trip method, it begins with the conversation method to explore students' understanding, conduct questions and answers, and direct students to learning objectives. Furthermore, after visiting the zoo, the method of giving assignments to students as a follow-up activity was stated.

In the learning implementation product, analysis is carried out through the study of learning videos. The results of the analysis show that the learning video shows students implementing learning by using other students as students. Some of the advantages of learning activities that can be seen include: learning situations can be conditioned well, activities are carried out according to the plans made, time can run efficiently, and students who act as teachers seem able to master learning and explain in good language and easy for students to understand. This result is in accordance with what was conveyed by De et al. (2003). The application of PBL can develop students' problem-solving skills through real experience and become autonomous and independent learners.

In addition to the advantages, this study also has disadvantages. The disadvantage of this implementation is that students have not implemented it in children so the response from students cannot be seen in actual learning. This becomes input in further learning. Another correction to the implementation of PBL in this lecture is learning that is not running optimally due to the pandemic. During the pandemic, the lectures were limited to blended learning, namely 50% online and 50% offline, which could be an obstacle to material that was not 100% understood by students. In the practice of implementing learning, it is also a correction in the future. If the situation is under control, then the implementation of learning will be carried out by direct practice with children, so that the results of learning can be known precisely.

#### 4 CONCLUSION

Problem-based learning activities in the learning strategy course have been carried out from Stages 1 to 7. In stage 1, several problems that occurred in the field were presented, namely learning that had not gone well because it had not used varied learning methods and appropriate activities. Stage 2 students find one of the most important problems in learning and the importance of the problem raised and given a solution, namely the use of a variety of

learning methods. In Stage 3, students are invited to find the benefits of problem-solving for themselves, namely that students will be ready when they graduate to become professional teachers who innovate in learning. In Stage 4, students formulated important things that students must find as the basis for the next stage, namely studying appropriate material such as teaching skills and learning methods. Students also formulated problems and solutions that must be found as problem-solving. Stage 5 students carry out self-study of self-study material, and analyze and find solutions to problems to be presented.

In Stage 6, students presented the results of the discussion with a random technique. This technique is used so that all group members are ready for presentations and understand the material individually. It is proven that with this technique, many students participate in the problem-solving discussion process after the presentation is carried out. The final stage is stage 7 in which students make learning innovations and with two products, namely learning planning documents and learning implementation, which were recorded. The advantages of learning activities that can be seen include: properly conditioning learning situations, carrying out activities according to plans made, running time efficiently, and students acting as teachers being able to master learning and explain in language that is easy for students to understand.

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## Profile of critical and creative thinking skills of chemistry education students based on non-routine problems

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**ABSTRACT:** The purpose of this research is to describe the critical thinking skills and creative thinking skills of 8th-semester chemistry education students. The study used quantitative analysis to provide an overview of students' abilities. The instrument used was an open-ended essay test based on non-routine problems accompanied by a scoring rubric that has been validated and declared valid for use as a test to measure critical and creative thinking skills. The results showed that students' critical thinking skills were in a good enough category for analysis, interpretation, and inference indicators, while their ability to think creatively was in the poor category for indicators of fluency, originality, flexibility, and elaboration. The results of this study are expected to be the basis for developing learning that can improve students' critical and creative thinking skills. Critical and creative thinking skills are essential for the problem-solving process.

### 1 INTRODUCTION

The law of the Minister of Education and Culture of the Republic of Indonesia number 3 of 2020 concerning National Higher Education Standards, especially in Article 5, states that undergraduate graduates must have qualifications in the field of attitudes, knowledge, and skills as formulated in competency standards and described in learning outcomes (Mendikbud RI 2020). One aspect of the skills referred to in the regulation is higher-order thinking skills. Critical thinking and creative thinking are the domains of higher-order thinking skills (Sulaiman et al. 2017; Yee et al. 2016). Both types of thinking skills are cognitive skills. Critical thinking skills are the ability of a person to think critically and make logical, rational, and systematic relationships. The ability to perform analysis, interpretation, and inference are the indicators of critical thinking (Facione 2015). The analysis is the ability to reason, identify, compare, classify, and check the correct interaction between data, graphs, statements, and concepts based on theories, sources, or other relevant information. Interpretation is a thinking skill used to correctly determine meaning through data, procedures, standards, charts, diagrams, or graphs to clarify the intent of someone or something and whether the generalizations taken are correct. The inference is the ability to assess the accuracy of a conclusion based on the results of identification made logically based on available information by looking at relevant data, principles, opinions, and other representative forms (CCTST 2013; Irwanto et al. 2018).

Creative thinking skills are a process of developing unusual ideas and being able to produce new thoughts. Creativity is synonymous with the ability to show fluency, flexibility, and originality in thinking and the ability to elaborate on the ideas of the results of their thinking (Dewi & Mashami 2019; Zubaidah et al. 2017). Fluency is the capability to smoothly provide many ideas, approaches, suggestions, or alternative answers to a problem while learning

within a given time. Flexibility is the capability to generate ideas, solutions, or questions from exceptional views through the approaches of questioning and methods used. Originality is the capability to give someone novel and distinctive approaches or ideas to resolve troubles or create uncommon and specific combos of components or factors that have been unthinkable through others. On the other hand, elaboration is the ability to improve, develop, add, describe, or specify information about objects, ideas, products, or conditions to increase their interest.

Problem-solving skill is needed in everyday life. Critical and creative thinking skills are crucial to improving problem-solving abilities (Birgili 2015; Facione 2011; Kriswantoro et al. 2021). There is a significant relationship between critical thinking skills and problem-solving abilities (Arifin et al. 2020; Irwanto et al. 2018; Sulianto et al. 2018). Both are complementary and important ways of creative problem-solving (Treffinger & Isaksen 2005). Creative thinking patterns in scientific work enable students to generate diverse ideas so that, from these ideas, the most appropriate answer can be chosen for problem-solving (Briliantyas et al. 2018; Hendriana et al. 2017; Syahrin et al. 2019).

Giving non-routine problems is used to see students' abilities in applying the knowledge they acquired during college. Non-routine problems require high-stage thinking and should be regularly discovered in teaching materials. Prior expertise has to be tailored to new conditions, and the solution needs to be apparent. To resolve such troubles, college students must be capable of carrying out a collection of cognitive activities, including organizing and classifying information, spotting and know-how the connection between information and hypotheses, and providing responses (Kablan & Uğur 2020). Contextual problems train students to think systematically, find various ways out of a difficulty, and improve their ability to analyze a problem from various aspects (Sinaga & Silaban 2020).

Thus, it is essential for us to know our students' critical and creative thinking skills. It relates to the readiness of students in real life, as well as providing teaching for their students later in life. The description of student abilities will also provide a policy for lecturers or leaders of higher education institutions to design a sound learning system for students.

## 2 METHODS

The type of research used in this manuscript was quantitative research. Quantitative description is used to express the percentage distribution of students' critical and creative thinking abilities. Five experts validated the instruments used in a critical and creative thinking skill test and got very valid scores. The instrument uses non-routine problems that are open-ended. The indicators of critical thinking skills used were analysis, interpretation, and inference, each of which has three questions. There were five questions for creative thinking skills with indicators of novelty, fluency, flexibility, and elaboration. The number of research subjects was 48 students from 3 different classes at the same semester level, which were taken randomly. The scoring of critical and creative thinking skills from 0 to 4 with the scoring criteria is presented in Table 1.

Table 1. Criteria for scoring critical and creative thinking skills.

Score	Criteria
4	Very good
3	Good
2	Good enough
1	Not good
0	Not very good

### 3 RESULT AND DISCUSSION

#### 3.1 *Critical thinking skills*

The form of instrument for critical thinking skills was open-ended questions. The written test uses three questions for each indicator of critical thinking skills, including analysis, interpretation, and inference indicators. To facilitate the analysis of student answers, a scoring rubric was created. Critical thinking test questions and scoring rubrics have been validated by experts and get very valid assessments. Table 2 is a scoring rubric for critical thinking skills.

Table 2. Critical thinking skills scoring rubric.

No.	Indicator	Rubric	Score
1	Analysis	Describe the answer wholly/correctly under the phenomenon, the concept is appropriate, and the interrelationship between the problem and the concept	4
		Describe answers incompletely, not all phenomena are explained but can use appropriate concepts	3
		Describe answers incompletely, not all phenomena are explained, some use appropriate concepts, and some concepts are not appropriate	2
		Describe answers incompletely, not all phenomena are explained, and most of the concepts used to describe are not appropriate	1
		No answer/wrong answer there is no relationship between the answer and the phenomenon/concept	0
2	Interpretation	Provide answers in the form of accurate predictions based on phenomena/data, concepts/theories, and are interconnected	4
		Provide answers in the form of accurate predictions based on phenomena/data, but the phenomena and concepts used are not related to each other	3
		Provide answers in the form of inaccurate predictions based on phenomena/data, or concepts/theories used	2
		Provide answers in the form of inaccurate predictions, not under the phenomena/data but accompanied by explanations with unrelated concepts/ theories	1
		Did not answer / incorrect answer and not accompanied by an explanation	0
3	Inference	Conclude appropriately according to the problem, data/information/evidence, and related concepts	4
		Conclude according to the problem, according to the concept used but not following the data	3
		Conclude according to the problem, not by the data and concepts used	2
		Conclude but are not per the problems, data and concepts used	1
		Not answering or drawing the wrong conclusion	0

The results of the critical thinking skills test are presented in Table 3. The data was obtained by counting the number of students who scored 0–4 from each indicator. The data was presented in percentage to make it easier to see the most prominent and negligible data.

Table 3 presents data showing students' critical thinking skills; the majority scored two on each indicator. Based on the scoring criteria presented in Table 1, the student's ability was still a reasonably good criterion—the highest average score in the interpretation, inference, and analysis indicators. Because most students did not analyze all the parts that appeared in the described phenomena, they got a score of 2. Students gave answers in the form of inaccurate predictions based on the phenomena/data or concepts/theories used. While concluding, students were able to make conclusions in the form of statements and follow the

Table 3. Percentage of critical thinking skills score.

Score	Analysis	Interpretation	Inference	
Percentage of students (%)	4	17.74	36.76	21.43
	3	20.97	19.12	21.43
	2	53.23	39.71	47.62
	1	4.84	4.41	7.14
	0	3.23	0	2.38
Average score	2.09	2.68	2.21	
Criteria	Good enough	Good enough	Good enough	

problems posed but needed to pay more attention to the data given in the questions. Students' critical thinking skills were in the excellent category.

Results of the other studies also show students' low ability in critical thinking skills (Agnafia 2019; Arnita et al. 2019; Maslakhatusunnimah et al. 2019). Saputro et al. (2022) showed that 72%, of students have very few critical thinking abilities and 18% have less critical thinking abilities. Giving non-routine problem-based questions is a question that must apply and connect various concepts. Students needed to become more familiar with questions like this. Students were still accustomed to conceptual, non-contextual, problems. Contextual problems use problems encountered in everyday life and must be solved with the ability to create and plan solutions related to the material and real-life encountered (Analu et al. 2016). Students do not associate with learning materials in solving contextual problems because they are not familiar to present appropriate settlement steps to solve contextual problems (Alhayat et al. 2022).

Low critical thinking skills can harm further education. Students who are accustomed to think critically or at higher levels will be accustomed to distinguishing between facts and opinions, something correct and incorrect, and knowledge and belief. Critical thinking skills are also the basis for students to be the ability to think creatively and solve problems (Harjo et al. 2019; Irwanto et al. 2018; Sulianto et al. 2018; Susilo et al. 2018). Given the importance of students understanding critical thinking skills, they must continue to be trained to students. In addition, lecturers must also think about developing learning models, strategies, methods, or learning techniques that are interactive, inspiring, challenging, fun, and motivating, applying contextual learning, and train students with test questions or exercises that require problem-solving in a context so that it has an impact on improving students' critical thinking skills.

### 3.2 Creative thinking skills

Five open-ended essay questions were used to measure creative thinking skills. Scoring guidelines were also provided to make it easier to assess student answers. The scoring rubric applies to all questions using the same rubric in each indicator because the rubric was made based on indicators of creative thinking skills. The indicators used in this study are fluency, originality, elaboration, and flexibility. Table 4 presents the scoring rubric for each indicator of creative thinking skills.

The results of the assessment of creative thinking skills can be seen in Table 5. The data was obtained by counting the number of students who scored 0–4 from each indicator. The data were presented in percentages.

Table 5 data was obtained from students working on five creative thinking questions, where each question was given a score for each creative thinking indicator. The data obtained was then calculated as the percentage of the number of students with that score. Table 5 shows that the student's ability for the highest fluency indicator is at a score of 3. It

Table 4. Creative thinking skills rubric.

No	Indicator	Rubric	Score
1	Fluency	Mention/write more than one idea, suggestion, or alternative answer with clear explanations/steps	4
		Mention/write one idea, suggestion, or alternative answer with a clear explanation/steps	3
		Mention/write more than one idea, suggestion, or alternative answer without a clear explanation/steps	2
		Mention/write one idea, suggestion, or alternative answer without a clear explanation/steps	1
		Not answering or giving the wrong answer	0
2	Originality	Develop/enrich ideas/ unusual/relatively new, logical, and relevant ideas/methods	4
		Mention/ write/ solution with ideas unusual/ surprisingly new idea, logical, and applicable to the given problem	3
		Mention/ write/ solution with ideas usual/ traditional approaches which can be logical and applicable to the given problem	2
		Mention/write/solution with ideas usual/ traditional approaches, however much less applicable to the given problem	1
		Not answering or giving the wrong answer	0
3	Elaboration	Capable of enriching and developing an idea or concept, or product; detailing in element an object, concept, or state of affairs so that it turns into more fabulous interesting	4
		Capable of enriching and increasing an idea or concept, or product, including detailing in element an object but there was missing info of an object, concept, or product	3
		Less capable of enriching and increasing an idea or concept or product, detailing much fewer elements of an object or concept or product in order that it will become more tremendously interesting	2
		No longer enhance and increase an idea or concept or product, no more extended detail in element an object or concept or product in order that it will become more tremendous interesting	1
		Not answering or giving the wrong answer	0
4	Flexibility	Answer questions in two or more different ways, according to the concept, accompanied by answers that vary/connect between concepts	4
		Answer the question in two or more different ways, according to the concept, but the answers do not vary, still in the same concept	3
		Answer questions in a way that is relevant to the problem and according to the concept	2
		Answer an answer that was less relevant to the problem	1
		Not answering or giving the wrong answer	0

Table 5. Percentage of creative thinking skills score.

Score	Fluency	Originality	Elaboration	Flexibility	
Percentage of Students (%)	4	6.67	1.67	3.33	3.33
	3	38.75	9.58	12.08	3.75
	2	1.67	36.25	29.58	41.25
	1	29.17	28.75	31.25	27.92
	0	23.75	23.75	23.75	23.75
average score criteria	1.75	1.37	1.4	1.35	
	Not good	Not good	Not good	Not good	

means that the students could mention/write an idea, suggestion, or alternative answer explanation/step. The highest originality indicator with a score of 2 shows that students could only write down ideas in ordinary ways that were logical and applicable to the given problem. However, for the elaboration indicator, the highest score was only at score 1. Students have not been able to enrich and develop ideas, and have not gone into detail about an idea they proposed, so that it becomes more interesting. The highest score of 2 was obtained for the flexibility indicator, meaning that students could answer questions in only one way that is relevant to the problem and according to the concept. Students have not been able to answer in more than one way.

This low creative thinking skill is like research by Faelasofi (2017), which shows low creative thinking aspects on fluency, flexibility, and originality indicators. Meanwhile, other research shows low creative thinking skills on indicators of fluency, flexibility, originality, and elaboration (Wang 2017). Perdana et al. (2019) gave the creative thinking skills test, getting the highest score of 68.75 for females and males, with an average score of 44.31 for females and 46.95 for males.

Based on the data in Table 5, the students' creative thinking abilities could vary. Every human being has been created with different levels and has a way of realizing their creativity (Siswono 2008). It is necessary to increase this ability because creative thinking skills are beneficial in everyday life. The questions for assessing creative thinking skills are non-routine, problem-based, and contextual. Questions that require solutions that join among principles. The low creative thinking skills have been because most students are solving problems in a way that is often used, exactly the way learned during previous learning. However, a few college students have been capable of locating approaches to solving problems that were distinct from the principles acquired while learning from other concepts or experiences they have gained. Students were less able to connect between concepts because they could not describe answers with more than one idea, more than one way, with unique ideas, and more broadly. Moreover, students were less encouraged to prove the concept (Sumarni & Kadarwati 2020).

Given the importance of this creative thinking skill, it needs to be improved through much practice, learning, or structured tasks designed by the lecturer. It is necessary to encourage an excellent social environment to increase students' creative potential (Sitorus & Masrayati 2016). Encouragement of students' curiosity and self-confidence is one of the things that can help increase creativity (Briliantyas et al. 2018). The ability to think actively, creatively, and thoroughly in the learning process can be improved by highlighting problems in various aspects to find solutions, including solving non-routine problems (Rudibyni et al. 2020). This is important because creative thinking plays a vital role in problem-solving abilities and is one of the skills desired by the workforce (Daiana et al. 2021; Ernawati et al. 2019).

The results of this study are expected to become a reference in carrying out further actions, such as implementing or developing learning models that can improve critical and creative thinking skills. In addition, the preparation of supporting devices or media for these efforts. Policies are also needed to improve critical and creative thinking skills so that we can hope that Indonesia's PISA test positions can get even better rankings.

#### 4 CONCLUSIONS

The percentage distribution of the number of students for the indicators of critical thinking skills of analysis, interpretation, and inference shows the highest score at two or good enough. While the percentage distribution of the highest score indicator for creative thinking skills for fluency was at a score of 3, originality and flexibility were scored 2, and elaboration was at a score of 1. By calculating the average score of the test results, it can be concluded that students' critical thinking skills are still good enough, and creative thinking skills are still in the not-good category. Given the importance of these two types of skills mastered by

students, further action is needed from lecturers and the social environment so that students' critical and creative thinking skills can be improved.

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## Prospective teachers' conception of temperature and pressure/volume factors in chemical equilibrium

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**ABSTRACT:** Research and data analysis has been carried out on the concept of temperature and pressure/volume factor equilibrium on prospective teachers. The analysis was conducted on prospective teachers who took six semesters of education (CE18) and four semesters (CE19). This research uses mixed methods by combining qualitative and quantitative methods. The results obtained are 1) there are still many misconceptions that occur, especially the concept of the chemical equilibrium of temperature factors and pressure/volume factors, including prospective chemistry teachers; 2) there is a significant difference between the conceptions that occur between CE19 and CE18 teacher candidates, where the misconceptions formed are more experienced by CE18 teacher candidates who need more time to learn as prospective teachers; 3) requires learning that can explain the understanding of the concept as a whole, especially with the epistemology needed to form a conception, especially prospective teachers.

### 1 INTRODUCTION

The misconception is a discrepancy between the experts' concepts and scientific understanding. Misconceptions can be in the form of initial conceptual errors, including errors in connecting various concepts and wrong ideas. The existence of misconceptions should be a concern for teachers and can have an impact on student success in learning. This attention is even needed for prospective teachers or students of educational study programs. Mainly if this misconception also occurs to those who will become teachers and help students form their conceptions, including prospective chemistry teachers.

Regarding the concept of chemistry, the prospective teacher's view of chemical equilibrium still refers to a static state which is a big problem to understand that equilibrium is a dynamic process (Barke 2009; Duit 2013; Ibrahim 2012). Prospective teachers usually think that when a disturbance occurs, the system shifts to reach the same equilibrium state. The view of macroscopic representation makes teacher candidates believe that the rate of forward reactions will decrease until they stop (Barke 2009). However, the submicroscopic representation based on the collision model can explain so that prospective teacher more easily understands that two simultaneous reactions are taking part in an equilibrium system. Such an understanding is obtained from the study of the epistemology of the concept.

The epistemological aspect is truth, facts, and reality from the fact's point of view that can be verified or re-proved. Difficulties interpreting this epistemological aspect also occur in prospective chemistry teachers on the concept of dynamic equilibrium. The conception profile: conception corresponds to 23.53%; less conception to 1.76%; wrong conception to 1.76%; and misconceptions to 72.95% of prospective chemistry teacher students 2018 (CE18). Meanwhile, the conception profile of prospective chemistry teachers in 2019 (CE19) is 18.45% conception, 6.55% less conception, 0% wrong conception, and 75%

misconceptions (Chi 2017). For this reason, to more accurately diagnose prospective teachers' conceptions of the chemical balance of concentration factors, visualization is used to describe the epistemological study of prospective teachers (Chi 2008).

## 2 METHOD

### 2.1 *Type of research*

The research method used is mixed methods, a combination of qualitative and quantitative methods. The combined model chosen is concurrent, which combines qualitative and quantitative methods simultaneously, namely the Concurrent Embedded Strategy. In this study, the primary method is a qualitative method to obtain cognitive process data by changing students' understanding of concepts on the chemical equilibrium of temperature and pressure/volume factors. The secondary method as a support is a quantitative method to obtain data on the level of students' concept mastery of that concept. Qualitative and quantitative methods were used during the stages of data collection, data analysis, and data interpretation.

### 2.2 *Research design*

The subjects in this study were several prospective chemistry teacher students in the Chemistry Education Study Program, FMIPA State University of Surabaya, who were selected using a purposive sampling technique based on a specific goal, not based on strata or random. The number of research samples was 166 students of chemistry education consisting of 2 groups mapped based on the length of the semester taken to see their concepts on the concept of chemical equilibrium. Respondents were given a diagnostic instrument consisting of five levels in a test consisting of 1) main questions, 2) level of trust, 3) the reason for the answer, 4) level of trust and 5) picture/representation answers. In the five-level test, conception and drawing are combined into one instrument so that students' conceptions can be diagnosed more clearly with this instrument. The five levels of the test consist of 1) main questions, 2) level of trust, 3) the reason for the answer, 4) level of trust, and 5) picture/representation answers. As with other multiple tests, this five-level test also requires decisions about the variety of answers given by students. The five-level test has one additional level, which describes the explanation of the last level.

### 2.3 *Data collection tools*

We independently developed the diagnostic test instrument. The relevant experts then validated the developed instrument. The scale consists of 15 items with five indicators, namely the suitability of the diagnostic test with the concept of chemical equilibrium, conformity with the study of science, chemical representation, language, presentation, and graphics. It used the Likert scale with four options. Instrument validity test involving 166 respondents, with a lower and higher score of 0.161 and 0.609, respectively, with an r-table of 0.138 at a 5% significance level. Meanwhile, the reliability test, 0.874 scores, higher than the 0.138 r-table. Therefore, the developed instrument is categorized as reliable.

### 2.4 *Data collection*

Respondents were given a diagnostic test in Google Forms to 2 groups of students, namely the 4th-semester and 6th-semester student groups, so 166 students were obtained, with 82 students in the 4th-semester and 84 6th-semester students/volume. Respondents were asked to watch two videos related to the influence of the temperature factor and two other

videos related to the pressure/volume factor in chemical equilibrium. There are three stages in each diagnostic test, wherein stages 1 and 2 are given a five-tier diagnostic that uses chemical representations to describe the epistemology of concepts. The representation is used after observing activities at tiers 1 and 3 and answering tiers 2 and 4 regarding confidence level. In particular, at tier 5 on the diagnostic test, students are asked to draw related chemical representations better to describe prospective teachers' conceptions of epistemological studies.

### 2.5 Data analysis

The obtained interval data were analyzed using non-parametric statistics. The data analysis involved descriptive analysis, followed by a normality test, homogeneity test, and hypothesis test using a dependent t-test facilitated by SPSS version 22.00 for windows. The descriptive analysis was used to analyze the differences in the results of 2 different groups. The normality test was carried out using the Kolmogorov-Smirnov test to measure the data distribution between groups. The data was classified as usual if the significance value  $> 0.05$ . The values were considered adequate if the significance value (2-tailed)  $< 0.05$ .

## 3 RESULTS

Based on data analysis, the results obtained according to Tables 1 and 2 show that there is a difference between prospective teacher (CE) 18 and prospective teacher (CE) 19 with Sig 2-tailed  $< 0.05$ , so  $H_0$  is rejected and the result is that there is a significant difference in concept perception between CE18 and CE19 class.

Table 1. Results of the descriptive analysis on student's conception temperature and pressure/volume.

		N		Mean Rank		Sum of Ranks	
Grade	CE19	84	84	10.25	94.28	9177.00	7919.50
	CE18	82	79	57.12	68.94	4684.00	5446.50
	Total	166	163				

Table 2. Results of two-sample Kolmogorov-Smirnov test for temperature topic.

		Score	
Most Extreme Differences	Absolute	.320	.290
	Positive	.000	0.000
	Negative	-.320	-.290
Kolmogorov-Smirnov Z		2.061	1.850
Asym.Sig. (2-tailed)		.000	.002

From the implementation of the diagnostic tests performed, data such as Table 3 are obtained.

For stage 1 with video 1, it was found that at CE19, for the appropriate conception category, it was 84.52% and for misconceptions was 15.47%. In comparison, at CE18, it was 30.48% for the appropriate conception category and 52.43% for the misconception category. From these results, it can be seen that the concept of the chemical equilibrium of the

Table 3. Results of conception of stage 1 for temperature factor.

Prospective Teachers	Conception (%)			
	Suitable Concept	Less Concept	False Conception	Misconception
CE19	84.52	00.00	00.00	15.47
CE18	30.48	17.07	00.00	52.43

temperature factor in part 1 can be obtained from a considerable number of misconceptions by CE18 as a prospective teacher who has taken semester six compared to prospective teachers who have taken semester 4. It gets the same result as stage 2 of the diagnostic test on the same concept in Table 4.

Table 4. Results of conception of stage 2 for temperature factor.

Prospective Teachers	Conception (%)			
	Suitable Concept	Less Concept	False Conception	Misconception
CE19	79.76	3.57	00.00	16.66
CE18	31.70	24.39	00.00	43.90

The results for stage 2 with video 2 showed that at CE19, for the appropriate conception category, it was 79.76%, and misconceptions were 16.66%. At the same time, at CE18, it was 31.70% for the appropriate conception category and 43.90% for the misconception category. From these results, the concept of the chemical equilibrium of the temperature factor in stage 2 can be obtained as a result of a more significant number of misconceptions by CE18 as a prospective teacher who has taken semester six compared to prospective teachers who have taken semester 4. The misconceptions experienced by prospective chemistry teachers are increasing while studying as a prospective chemistry teacher. Meanwhile, in another concept, namely the concept of chemical equilibrium pressure/volume factor, the results are shown in Tables 5 and 6.

Table 5. Result of conception pressure/volume factor stage 1.

Prospective Teachers	Conception (%)			
	Suitable Concept	Less Concept	False Conception	Misconception
CE19	61.90	1.19	00.00	36.90
CE18	35.36	25.60	00.00	35.36

Table 6. Result of conception pressure/volume factor stage 2.

Prospective Teachers	Conception (%)			
	Suitable Concept	Less Concept	False Conception	Misconception
CE19	66.66	1.19	00.00	32.14
CE18	32.92	21.95	00.00	41.46

For stage 1 with video 1, data was obtained that at CE19, for the appropriate conception category, it was 61.90%, and misconceptions were 36.90%. In comparison, at CE18, it was 35.36% for the appropriate conception category and 35.36% for the misconception category. These results show that more misconceptions can obtain the chemical equilibrium pressure/volume factor concept in step 1 at CE19 than at CE18. However, this result differs from the stage 2 diagnostic results in Table 6.

For stage 2 with video 2, it was found that at CE19, for the appropriate conception category, it was 66.66%, and misconceptions were 32.14%. In comparison, at CE18, it was 32.92% for the appropriate conception category and 41.46% for the misconception category. From these results, the test respondents can obtain the concept of dynamic equilibrium in part 2 well. From the data above, there are more misconceptions about CE18 compared to CE19.

#### 4 DISCUSSION

In the diagnostic test of the concept of chemical equilibrium temperature factor stage 1, a video shows a demonstration using the equilibrium reaction:



It is known that  $\text{NO}_2(\text{g})$  is reddish brown, and  $\text{N}_2\text{O}_4(\text{g})$  is colorless. A glass tube is prepared with the above equilibrium system. Two glass bottles were prepared, which contained hot water (left bottle) and cold water (right bottle). Respondents were asked to pay attention to the changes that occur when a glass tube is placed in cold water. In step 2, use the same equilibrium reaction. Respondents were asked to pay attention to the changes that occur when a glass tube is placed in hot water.

This diagnostic test uses videos that can be observed by prospective teachers and then used as a part of the macroscopic representation of existing concepts. The last level of this diagnostic test is that prospective teachers are asked to draw a representation of chemistry, sub-microscopic and symbolic so that each individual will be involved in the epistemological process of describing the concept of the chemical equilibrium of the temperature factor.

Further explanations describing the conditions that occur in video 1 and video 2 are shown in Figure 1 microscopically. The depiction of CE9-89 can be seen that a symbolic depiction is appropriate. Respondents can show the changes that occur when the chemical equilibrium system is disturbed by the system's temperature. Symbolic representations 1 and 2 illustrate that CE9-89 has shown an understanding that when the equilibrium system is disturbed, the equilibrium shifts, which then forms a new equilibrium after a while. The figure above also shows that CE9-89 understood that an equilibrium reaction occurs. The rate at which the reactants turn into products is the same as when the products turn back into reactants. From this description, it has been concluded that CE9-89 has understood the

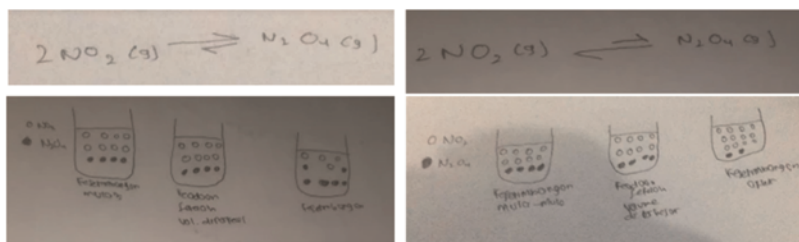


Figure 1. Symbolic and submicroscopic description of respondents CE9-89 for the concept of the chemical equilibrium of temperature factor in stage 1 (top) and stage 2 and the concept of the chemical equilibrium of pressure/volume factor in stage 1 and stage 2 (bottom).

concept. The sub-microscopic descriptions 1 and 2 carried out by CE9-89 for the concept of chemical equilibrium pressure/volume factor can also describe the epistemological understanding of the respondents. When the equilibrium system is disturbed, the equilibrium shifts, which then forms a new equilibrium after a while.

However, the weakness of sub-microscopic depiction CE9-89 can be seen from the system condition, which does not show a change in pressure/volume according to the video he has observed. However, CE9-89 can be said to understand the concepts of the chemical equilibrium of temperature and pressure/volume factors. A different depiction can be seen from the representation of CE8-85 in Figure 2.

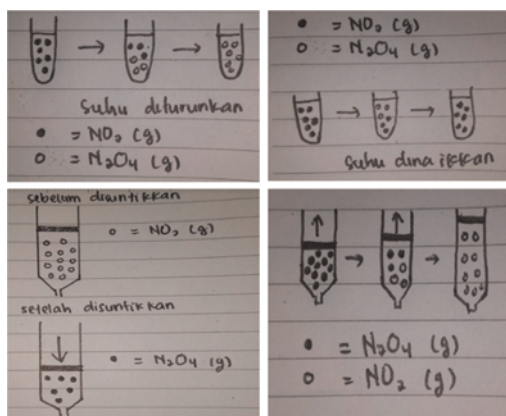


Figure 2. Submicroscopic description of respondents CE8-85 for the concept of the chemical equilibrium of temperature factor in stage 1 (top) and stage 2 and the concept of the chemical equilibrium of pressure/volume factor in stage 1 and stage 2 (bottom).

The CE8-85 depiction shows that the sub-microscopic depiction can show the changes that occur when the chemical equilibrium system is disturbed by the system's temperature. Submicroscopic representations 1 and 2 illustrate that CE8-85 has shown an inaccurate understanding. The initial system is not described as an equilibrium system. Even when the system is disturbed, what is described as occurring is a reaction that has completely reacted, not a shift in equilibrium. The image above demonstrates how CE8-85 epistemology ignores that an equilibrium reaction happens when the rate at which the reactants and products change into one another and back again is equal. From this description, it has been concluded that CE8-85 is a misconception. The sub-microscopic descriptions of 1 and 2 performed by CE8-85 for the chemical equilibrium pressure/volume factor can also illustrate the respondent's inaccurate understanding of epistemology. CE8-85 describes a system that is not in equilibrium. When the system is disturbed by pressure/volume, what is described as occurring is a reaction that has completely reacted, not a shift in equilibrium.

CE8-02 also illustrates the reaction in Figure 3. Submicroscopic representations 1 and 2 illustrate that CE8-02 has shown a misunderstanding. The initial system is described as a static system. When the system is disturbed, what is described as occurring is a reaction that has completely reacted and not an equilibrium system that is in equilibrium.

The picture above shows the epistemology of CE8-02. It needs to understand that an equilibrium reaction occurs when the rate at which the reactants turn into products is the same as at which the products turn back into reactants. From this description, it has been concluded that CE8-02 has a misconception. The sub-microscopic descriptions of 1 and 2 by CE8-02 for the chemical equilibrium pressure/volume factor can also illustrate the respondent's incorrect understanding of epistemology. CE8-02 describes a system that is not an equilibrium system. When the system is disturbed by pressure/volume, CE8-02 describes what happens as a reaction that has completely reacted and not a shift in equilibrium.

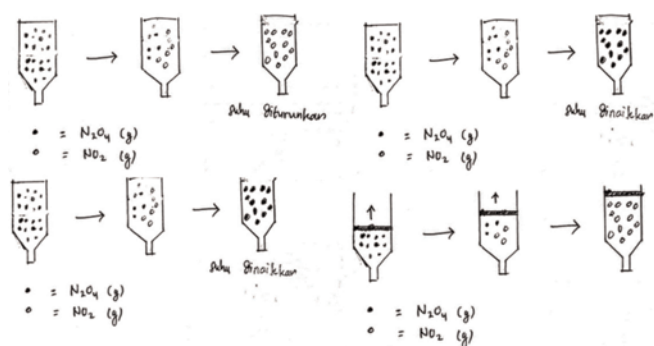


Figure 3. Symbolic and submicroscopic description of respondent CE8-02 for the concept of the chemical equilibrium of temperature factor in stage 1 (top) and stage 2 and the concept of the chemical equilibrium of pressure/volume factor in stage 1 and stage 2 (bottom).

This follows the results, which state that these misconceptions can occur when students fail to understand the nature of the appearance of chemical entities, their properties, and their interactions at the time of writing and building the concept (Anam 2019). Students' views on chemical equilibrium still refer to a static situation which is a significant difficulty in understanding that equilibrium is a dynamic process (Barke 2009). This is also the cause of the wrong conception of prospective teachers. For that, we need learning that can explain the understanding of the concept as a whole, especially with the epistemology needed to form a conception.

## 5 CONCLUSION

The conclusions that can be obtained are 1) there are still many misconceptions that occur, especially the concept of the chemical equilibrium of temperature factors and pressure/volume factors, including prospective chemistry teachers; 2) there is a significant difference between the conceptions that occur between CE19 and CE18 teacher candidates, where the misconceptions that are formed are more experienced by CE18 teacher candidates who take longer to study as prospective teachers; 3) requires learning that can explain the understanding of the concept as a whole, especially with epistemology which is very necessary to form a conception, especially prospective teachers.

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## The implementation of Adaptation, Imitation, and Modification (AIM) in ESP-courses

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**ABSTRACT:** Students pursuing ESP courses have previously learned Syllabus Design (SD) and Developing ELT Material (DEM) which focus on general English taught at schools. In ESP courses, they learned to design syllabi and develop learning material in different contexts, mainly English for Occupational Purposes (EOP). It was presumed that the students would have no difficulty completing the tasks in the ESP courses because, in SD and DEM, they had acquired knowledge and skills that were deemed helpful in completing ESP course tasks. This study investigated whether the presumption is confirmed and explained how students Adapted, Imitated, and Modified (AIM) what knowledge and skills they learned in SD and DEM. Considering this study, 54 university students filled a semi-structured questionnaire and 15 joined a focused group discussion. It was found that among AIM, the most applied skill is adaptation. A modification was done when ESP course tasks required them to define, select, explore, and exploit ESP materials extensively and to the maximum extent possible. Thus, the students understand the concept of AIM properly and can implement their learnings in SD and DEM courses. More importantly, they were also able to make necessary adjustments to fulfill the tasks of ESP courses.

### 1 INTRODUCTION

In this post-covid-19 era, the teacher's ability to adapt, imitate, and modify knowledge in one learning context into another is found to be an essential skill. Pyhältö et al. (2015) illustrated the importance of adaptability by teachers acquired in formal education and teacher communities. It turns out that teachers are also required to modify this knowledge and skills in several contexts of their respective classes (Pyhältö et al. 2015). The ability to modify is a characteristic of teacher professionalism (Pyhältö et al. 2015). The ability to imitate is often associated with the learning process of being an expert disciple, known as the craft model (Wallace 1991). In this model, all teachers must be exposed to observing experts, especially when studying a teacher's education. Logically, when teachers are in their community, they can imitate their peers with good practices. It is called imitating teachers with Evidence-Based Practice (EBP) (Leko 2015).

Research on the ability of teachers to adapt, imitate, and modify knowledge and skills in one learning context into another has been widely conducted. Pyhältö et al. (2015), for example, revealed that thousands of teachers in Finland learn from their fellow teachers through the transforming process of their teaching, strengthening their collective self-confidence, increasing their dependence on each other, and providing mutual assistance to fellow teachers. However, the same ability of preservice English teachers has not been widely studied. Jung & Ottenbreit-Leftwich's (2020) research shows that modeling in Learning Technology courses can strengthen the experience of preservice teacher students in using technology. However, the study did not specifically reveal whether preservice English teachers were modeled in their courses to become English teachers.

In response to the research gap, this study aims to explain how students of English for Specific Purposes (ESP) Program Design and ESP Materials Development adapt, imitate, and modify the knowledge and skills acquired in the Syllabus Design (SD) course and Developing EFL Materials (DEM) into the process of learning knowledge and skills in the ESP Program Design and ESP Materials Development courses. This research is crucial since it is expected to contribute to the teaching and learning procedures of ESP Program Design and ESP Materials Development courses which eventually impact English teacher education quality. If it is proven to be beneficial and has an impact, it has the potential to be used by lecturers of other universities who teach ESP Program Design and ESP Materials Development. The results are also expected to provide an overview of the learning process of preservice English teachers in English education study programs. From this description, it is hoped that there will be a model for adapting, imitating, and modifying competencies from one subject to another in the English language education study program. The model that is expected to be developed can start from the adaptation framework through the six steps proposed by Leko (2015). This research is expected to provide a new model of the learning process to become a teacher in the English teacher education area.

### 1.1 *Adaptation, Imitation, Modification (AIM)*

Adaptation, Imitation, and Modification (AIM) is a term in the context of one's learning to become an expert. However, these terms are not limited to just one context. In discussing the training model to become a teacher, Wallace (1991) used the term adaptation in the applied science model, where the trainees are expected to adopt the theory from the expert by applying it in his context. Imitation is part of the craft model, where trained students must observe and imitate what experts do. The term modification is part of the training model proposed by Wallace (1991), namely the reflective model, where the students being trained must reflect on their experiences with the experts and their experiences of applying the knowledge gained during training and modifying it for improvement in the following application context. In developing the latest training model for preservice English teachers, Johnson (2009) convinced English teacher educators to use a sociocultural approach. It means that learning to be an English teacher on campus or at a teaching education institution is not sufficient; it must also be from the English teacher community, which is called Praxis (Dogancay-Aktuna & Hardman 2008). This praxis process will involve many AIMs. However, research that explicitly discusses the AIM of one course in English teacher education in other courses is rarely conducted.

### 1.2 *ESP courses in English teacher education*

ESP-based courses are a collection of courses offered to undergraduate students of English teacher education in a university in Surabaya, Indonesia, in the fifth semester. ESP is a branch of English learning that has two primary focuses: English for Academic Purposes (EAP) and English for Occupational Purposes (hEOP) (Basturkmen 2010; Woodrow 2018). EAP is an English language learning program aimed at students' academic needs such as English for medical students. Meanwhile, EOP focuses on learning English for fundamental work purposes. The EOP participants are usually company employees or professional workers, such as hotel receptionists and lawyers (Basturkmen 2010; Woodrow 2018).

In the English teacher education program curriculum, ESP courses are included in the independent learning program, allowing students from other study programs and universities to participate in the course (*S1 Pendidikan Bahasa Inggris* 2021). Five courses are included in this ESP course: ESP Program Design, ESP Material Development, ESP Assessment, ESP Vocabulary, and ESP Course Management. These courses are designed so that students will have the skills to face the challenges of the present and future world of education, especially in ESP learning. These ESP courses specifically prepare students to be

able to answer demands from the industry-driven world that require English language skills for their employees relevant to their respective fields. With the skills learned in the ESP courses, graduates of the English teacher education study program will be able to create their own jobs, irrespective of the vacancies available at schools or in companies.

In particular, the ESP courses investigated in this study were ESP Program Design and ESP Materials Development as these courses are the core of the ESP course group. In these two courses, students are provided with: 1) how to conduct a needs analysis, the results of which are used as the basis for designing an English course program with a specific purpose, 2) how to translate the needs analysis results into the final goals and specific objectives of the English program to be developed, and 3) how to develop materials for each of these specific purposes.

Based on the results of needs analysis in the ESP Program Design, students learn to determine the goals and objectives of the program, the number of meetings required by prospective clients, and the target language skills to be achieved in each session. Then, they put them in the form of a syllabus document. Furthermore, students learn to select and determine teaching materials under the objectives determined in the ESP Program Design. It is done in the ESP Materials Development Course. In preparing the teaching materials, students use relevant vocabulary knowledge from the ESP Vocabulary Development and ESP Assessment courses. After students can design a complete program with learning materials, they learn to create and manage language courses more broadly, including how to select and prepare instructors and conduct promotions.

The ESP Program Design course teaches the skills of designing course programs and learning syllabi. This course is similar to the SD course but different in the field of work. In the SD course, students prepare a syllabus and learning implementation plan based on core and essential competencies determined by the Ministry of Education according to the student's education level (Brown & Lee 2015; Macalister & Nation 2019). Meanwhile, in ESP courses, core and essential competencies are unavailable because students learn to formulate their own ESP program goals and objectives based on the needs analysis of their prospective students within the scope of EAP and EOP.

Due to the close relationship between the SD course, DEM, ESP Program Design, and ESP Materials Development, the knowledge and skills of students acquired in the SD and DEM courses will be adapted, imitated, and modified in the learning process in the ESP Program Design and ESP Materials Development courses. It is the logical expectation, but it has yet to be empirically proven. A study by Yang (2016) shows that learning is essential to evaluating ESP courses. Based on the syllabi of the SD and DEM courses, there are 16 knowledge and skills to be learned by students:

- 1) Developing the English school syllabus.
- 2) Differentiating school English syllabus and school English lesson plans.
- 3) Knowing the core components of the school's English syllabus.
- 4) Explaining the definition of essential competencies and indicators.
- 5) Writing the indicators of the given essential competencies.
- 6) Determining the suitable teaching material according to the indicator formulation.
- 7) Determining the suitable assessment according to the indicators.
- 8) Writing down the steps of English learning activities.
- 9) Explaining the principles of developing school English materials.
- 10) Explaining the framework for developing spoken and written English materials.
- 11) Explaining the difference between teaching materials and assessment
- 12) Knowing that the primary teaching material is the type of text in the basic competency.
- 13) Knowing that teaching materials must be designed to achieve learning objectives.
- 14) Developing school-spoken English teaching materials.
- 15) Developing school-written English teaching materials.
- 16) Exploiting and exploring text models into tasks in teaching materials.

For this reason, the current research is urgently needed to explain how ESP Program Design and ESP Materials Development students adapt, imitate, and modify the knowledge and skills acquired in SD and DEM courses to master knowledge and skills in the ESP Program Design and ESP materials development courses. Keeping this in mind, the ESP courses implemented in the English language education study program can be evaluated for improvement in the future, as suggested by Tsou & Chen (2014).

## 2 METHODS

This study applied both quantitative and qualitative research methods since this study aims to explain how students of ESP Program Design and ESP Materials Development adapt, imitate, and modify the knowledge and skills acquired in the SD and DEM courses in the process of acquiring knowledge and skills in the ESP Program Design and ESP Materials Development courses. The number of research subjects is 54 students from the class of 2019 who have taken SD and DEM courses, ESP Program Design, and ESP Materials Development. Among the 54 students, 15 also participated in a focus group discussion.

There are two kinds of data collected in this study. The first data is the subjects' answers to a semi-structured questionnaire asking whether the 16 knowledge and skills learned in SD and DEM courses were adapted, imitated, or modified into ESP Program Design and ESP Materials Development courses. The questionnaire consists of closed and open-ended items. Closed-ended questions are related to respondent data and their answers to the 16 knowledge and skills learned in SD and DEM courses presented previously. The open-ended question is to gather data about which of these 16 knowledge and skills are the most difficult to adapt, imitate, or modify and why. This questionnaire was distributed to students who have finished ESP courses via Google Forms.

To answer the questionnaire correctly and reduce misunderstanding of the terms, the participants were informed about the definition of AIM before filling in the questionnaire. Students are considered to make ADAPTATION when they try to preserve (although not 100%) previous knowledge and skills they learned in SD and DEM courses in a new context (ESP Program Design and ESP Materials Development courses). Students are considered to do IMITATION when they try to fully use (100%) previous knowledge and skills they learned in SD and DEM courses in a new context (ESP Program Design and ESP Materials Development courses). Moreover, finally, students are considered MODIFICATION when they change (up to 90%) previous knowledge and skills they learned in SD and DEM courses in a new context (ESP Program Design and ESP Materials Development courses).

The second data are the answers of 15 students who participated in a Focused Group Discussion (FGD) to follow up on the questionnaire results and explore how students adapted, imitated, or modified their knowledge and skills. The guiding questions in the FGD can be seen as follows.

- 1) Which 16 knowledge and skills can be mostly adapted, imitated, or modified in the ESP Course Design and DEM Program? Why?
- 2) Give examples of how you adapt, imitate, and modify.

The students' answers to the closed-ended questionnaire were analyzed quantitatively in the form of mean and mode. Meanwhile, the answers to the open-ended questionnaire and the FGD results were analyzed qualitatively by finding categories and themes that lead to an explanation of how students adapted, imitated, and modified the 16 knowledge and skills obtained in the SD and DEM courses into learning of knowledge and skills in the ESP Program Design and ESP Materials Development courses.

### 3 RESULTS AND DISCUSSION

The research findings in this section combine the questionnaire and FGD results. The findings are presented based on the research questions. Therefore, this section is divided into two parts. The first part shows the knowledge and skills most adapted, imitated, or modified in the ESP Program Design and ESP Material Development courses and the student's reasons for their answers. The second part presents examples of how students adapted, imitated, and modified the skills they learned in SD and DEM courses while taking ESP courses.

#### 3.1 *AIM of the knowledge and skills learned in SD and DEM when applied in ESP Program Design and ESP Materials Development courses*

Based on the student's answers in the questionnaire, students mostly made adaptations to 13 out of all the knowledge and skills they had learned in SD and DEM courses when they took ESP Program Design and ESP Material Developments courses. The knowledge and skills which were mainly adapted, imitated, or modified for ESP Program Design and ESP Materials Development courses are presented in Table 1.

Table 1. The AIM of knowledge and skills for ESP Program Design and ESP Material Development courses.

No.	Knowledge and skills	Mostly used strategy
1	Developing school English syllabus	M
2	Differentiating between school English syllabus and school English lesson plans	A
3	Knowing the core components of the school's English syllabus	A
4	Explaining the definition of essential competencies and indicators	A
5	Writing down the indicators of the given essential competencies	A
6	Determining the suitable teaching material according to the indicator formulation	A
7	Determining the suitable assessment according to the indicators	A
8	Writing down the steps of English learning activities	A
9	Explaining the principles of developing school English materials	A
10	Explaining the framework for developing spoken and written English materials	A
11	Explaining the difference between teaching materials and assessment	A
12	Knowing that the primary teaching material is the type of text that is in basic competency	A
13	Knowing that teaching materials must be designed to achieve learning indicators or objectives.	A
14	Developing school-spoken English teaching materials	A-M
15	Developing school-written English teaching materials	A
16	Exploiting and exploring text models into tasks in teaching materials	A-M

In Table 1, 'A' represents adaptation, and 'M' represents modification. Imitation is not available in Table 1 as most students did not apply it. Students reported that imitation was hardly conducted because doing imitation would prevent them from designing appropriate ESP programs and materials.

Thirteen knowledge and skills that students adapted are related to the prescribed curriculum, syllabus, and supporting unit from the Indonesian Ministry of Education. The pattern is rigid, and the language used is very formal Indonesian. Therefore, these features cannot be taken just as they are when used in ESP courses. It means that students have gone through some adaptation processes, as Leko (2015) suggested. There are several reasons for this. First, the language used in the curriculum referred to in SD and DEM courses is not

English, as English requires its users to make effective and efficient sentences, use acceptable and correct grammar and avoid run-on sentences.

In contrast, using run-on sentences in Indonesian is expected in the Indonesian syllabus. Second, the syllabus document must insert particular elements in the sentences used, especially in the learning objectives and indicators. In line with these reasons, ESP course students also admitted that imitation is the least applied since the rigid form and language of the prescribed curriculum and syllabus do not match their needs in developing an acceptable ESP syllabus.

Furthermore, the participants also explained that the reasons for their adaptation were that they only needed to adjust slightly what they had learned in SD and DEM, which focused on high school context into a new (different) context, that is, ESP that focuses on EOP. It indicates that most students maintain and apply the skill they have learned in the two previous courses in the two later courses (Leko 2015). For them, as long as the skills are workable to accomplish the ESP tasks, they would not modify the skills.

Sometimes, the students had the option of whether they would prefer to adapt or modify. The evidence shows that the students' answer for developing school-specific English teaching materials and the skill of incorporating textual models into tasks in teaching materials, which was equal for both adaptation and modification. The student's decision to adapt or to modify these two skills was based on the needs analysis results in the ESP Program Design. The students who reported that the needs analysis indicated possibilities to use materials commonly used at high schools preferred adaptation. On the other hand, students, who reported that the needs analysis showed that it seemed impossible to use school materials, tended to modify their skills. For them, modification enabled them to prepare learning materials suitable for their clients' needs.

Table 1 also shows that modification was mainly used when they were assigned to develop the ESP syllabus. The students' reasons were the use of English in the ESP syllabus and the learning objectives and indicator formulation. In ESP courses, learning objectives and indicators are written more straightforwardly than those prescribed by the Ministry of Education for high schools. Hence, ESP students had to adjust their skills in developing a syllabus, which shows that they already have the characteristic of teacher professionalism, as suggested by Pyhältö et al. (2015). They sometimes needed to adjust to the different ways of formulating syllabus items before they could fully understand that they needed to adjust their skills to some extent. In other words, they honed their skills in different contexts (Wallace 1991).

The formulation of learning objectives and indicators students learned in SD and DEM differs from those in ESP courses. According to the students, ESP courses' learning objectives and indicators are more straightforward than those students learned previously in SD and DEM. In these two courses, they had to use the essential competencies prescribed by the Indonesian Ministry of Education, fixed in forms and formulation. They were also urged to use Bloom's Taxonomy verbs to indicate the behavior the students are expected to achieve at the end of the teaching and learning process. In ESP courses, they did not have to use Bloom's action verbs as they are. They learned that formulating learning objectives and indicators was much more straightforward in ESP courses than in SD and DEM. The students were free to formulate objectives and indicators as effectively and efficiently as possible as long as they met the results of the needs analysis they conducted. However, this freedom requires them to think harder in creativity because there is no particular template they should follow. It shows that the lecturers in ESP courses have good modeling for the students (Jung & Ottenbreit-Leftwich 2020).

### 3.2 *Examples of how students conducted AIM in ESP course design and ESP materials development.*

The second part of this result and discussion explains how students adapt, imitate, and modify by giving examples. As mentioned previously, ESP students mostly adapted,

sometimes modified, but did not do an imitation. Therefore, the available examples are only for adaptation and modification.

An example of what the students did is from student A's experience. In the SD course, the development of the learning objectives was based on the basic competency prescribed by the ministry of education and used the action verbs from Bloom's taxonomy. Therefore, student A first checked the action verb of the basic competency with its cognitive domain (from knowing to creating or C1-C6). Knowing the cognitive level, the student then developed indicators using action verbs belonging to that basic competency's cognitive domain. For example, in the SD course in which students learn the syllabus for school, for "basic competency 3.4 Distinguishing Social functions, text structure, and linguistic elements of several news texts oral and written items", the action verbs that can be used to formulate the indicators under that basic competency is taken from cognitive domain C1-C2 such as identifying, differentiating, comparing, etc.

On the other hand, in the ESP Program Design, the formulation of learning objectives that student A developed was based on needs analysis. Here student A made a modification in which she determined learning objectives and indicators based on the needs analysis results, rather than ministry-prescribed essential competencies, without checking the cognitive domain of the action verbs. In the process, Student A was more concerned with the accuracy of the action verbs choice, based on the real-life situations of her ESP clients and to be used when they are using English in their working field, rather than being limited by the cognitive domain of Bloom's Taxonomy.

The following is a specific example of what student B did in the SD course.

The second example is from student B. Like student A, the first step taken by student B before determining indicators was to identify the action verbs belonging to the basic competency or learning objective and check the main topic of the basic competency. Student B identified an action verb to be used as *responding*, and when she checked the main topic, it was *the introduction*. After identifying both, student B formulated indicators and activities to develop students' ability to respond to English introductions. In this way, student B has implemented the procedure by the Ministry of Education according to the student's education level (Brown & Lee 2015; Macalister & Nation 2019).

Differently, in ESP courses, student B found out that the action verbs were based on something other than Bloom's Taxonomy. Student B admitted that it opened up her horizons even though this student initially found it difficult because of having issues in matching objectives with the indicators. Student B stated that being used to the terms "*Kata Kerja Operasional (KKO)*" (action verbs taken from Bloom's Taxonomy), it was difficult for her to find the right word beyond *KKO*. For example, during ESP Program Design, she determined an objective of *Sharing information with the public*. Her initial perception of "sharing" is to share. She got feedback that this "sharing" activity must have a "productive" side, which means that there are indicators in which students are expected to be able to produce information by themselves, not just share or pass on existing information. Finally, she changed that objective to *Delivering information*. It shows that the student has mastered the concepts of ESP as they read the resources in the classroom (Basturkmen 2010; Woodrow 2018).

An example of the complexity of the language in basic competency in the SD course is shown by one student as follows. Basic competency 4.2 is written composing simple spoken and written texts to state, ask, and straightforwardly respond to self-introductions, taking into account social functions, text structure, and linguistic elements that are correct and contextual. Meanwhile, ESP Program Design's objectives could be written, delivering information on health and medical topics to the public. This considerable difference confused me initially, but the students could finally adapt their skills and modify them. Such adaptation ability has been fostered in their teacher education, combing the reality in the field (ESP) and their learning on campus (Dogancay-Aktuna & Hardman 2008; Yang 2016). It is hoped that they will become professional English teachers after graduation.

## 4 CONCLUSION

From the findings and discussion above, it can be concluded that ESP students can adapt and modify the skills they learned in SD and DEM courses into ESP Program Design and ESP Materials Development. Moreover, they could tackle difficulties in adjusting their skills so that they can adapt and modify accordingly. In line with it, it is suggested that ESP Courses lecturers provide a pattern, template, and written guidance that can be referred to by ESP Courses students when they formulate learning objectives and indicators.

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## “Open your camera, please!”: EFL student teachers’ emotions in online teaching practicum

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**ABSTRACT:** Since teachers’ emotions affect many aspects of students’ classroom life, emotional experience is significant for student teachers in establishing a good learning environment. This study investigates how student teachers’ emotions are involved in online English teaching practicum, including the challenges and solutions concerning regulating their emotions. Eight students of the Language Education Program in a public university in Surabaya, Indonesia, participated in this study. The data were gathered through interviews and classroom observation. The findings reveal that students’ misbehavior, such as making funny expressions to attract others’ attention, ignoring the teacher’s instruction, and making noise, are some challenges that provoke student teachers’ emotions. Then, several strategies were applied to avoid negative emotions in handling students’ misbehavior, and feeling suppression is identified as the most frequently used strategy in online teaching practicum. Nevertheless, they also showed their anger and frustration by raising their voice, giving warnings and punishment, taking deep breaths, and being sad. Thus, teacher education needs to give much attention to student teachers’ emotional experiences since understanding the candidate teachers’ emotions is significant, for their emotions are likely to reflect on their future careers.

### 1 INTRODUCTION

Since emotions influence one’s thoughts and attitude, they play a significant role in the teaching and learning process in the classroom. Emotions can influence the student’s engagement in the classroom (Mazer et al. 2014; Wentzel 2016) and in e-learning processes (D’Errico et al. 2016). More specifically, teaching is a vigorous activity (Rodrigo-Ruiz 2016), and the teacher’s emotions will influence students’ emotions and behavior. Pekrun et al. (2002) explain that teachers’ negative emotions will impact negatively on students’ learning, and conversely, teachers’ positive emotions will impact positively on students’ learning. Too many negative emotions from the teacher (i.e., anger) may impede the student’s ability to process emotional information (Morris et al. 2013).

Although teacher emotions are identified to closely attribute to their teaching behaviors, evidence of how teacher emotions affect their teaching practices is somewhat limited (Chen 2019). Further, several studies have investigated the role of experienced teachers’ emotions in their practices (Cowie 2011; Mevarech & Maskit 2015; Chen 2019) instead of inexperienced teachers’ emotions, including student teachers’ emotions. Mevarech and Maskit (2015), for example, examined the intensity of teachers’ emotional appraisals related to the teaching profession and analyzed the differential effects of years of experience on the teachers’ emotional appraisals. Hence, Anttila et al. (2016) assert that the role of emotions in teacher education has largely been neglected.

When previous studies investigated experienced teachers’ emotional dimension, student teachers’ emotion types during their studies in teacher education, and the mentor teacher

opinions concerning the significant role of emotions in English teaching practicum, there is no study exploring the student teachers' emotions in online English teaching practicum. It highlights the urgency of examining how student teachers' emotions are involved in online English teaching practicum, including the challenges and solutions to regulating their emotions. Henceforth, it becomes an aim of this study. The findings will be precious information for a teacher education program since understanding the candidate teachers' emotions, including the challenges and the ways to regulate emotions in English teaching practicum, are likely to reflect on their future careers.

### 1.1 *The concept of emotions*

The term "emotion" can be understood as a dynamic and multicomponent psychological process covering affective, cognitive, expressive, and motivational components (Kleine et al. 2005). Then, teachers' emotion is known as individual teachers' mental activities, understanding of the emotions of others, the capacity for emotional regulation, and responses to these vigorous activities (Farouk 2012).

Principally, emotions can be developed into positive and negative valences (Kleine et al. 2005). Hope, pride, and enjoyment are perceived as positive emotions, whereas anger, boredom, and anxiety are categorized as negative (Pekrun et al. 2002). Furthermore, Parrot (2001) proposed three levels of emotions: primary, secondary, and tertiary. The primary level includes six basic emotions: surprise, joy, love, fear, sadness, and anger. The secondary level comprises a different range of emotions which can be grouped into the six basic emotions in the primary level. Henceforth, the tertiary level consists of more complex and superficial emotions, which can be allocated to the secondary emotional level.

Considering the positive and negative emotions in the classroom, Hagenauer et al. (2015) explain that both emotions indicate the interpersonal relationship between the teacher and the students, including the classroom discipline and the student's involvement in classroom activities. These relationships, then, are merged by experiencing emotions of anger, anxiety, and joy.

### 1.2 *Student teachers' emotions*

Student teachers are the ones who take a teacher education program for approximately four years. One of the significant programs they have to take is teaching practicum in schools since this program can provide broad practical classroom experiences. Nevertheless, it is also the most challenging activity since students' misbehavior is considered the top of fear. Thus, regulating emotions is critically crucial for they can create a positive atmosphere in the classroom since their emotions can impact their effectiveness (Sutton & Wheatley 2003), health and well-being (Taxer & Frenzel 2015), and students' emotions and motivation (Becker et al. 2014). When they can regulate their emotions, they will be able to manage the class well. As a result, they can encourage students in the learning environment.

To achieve various learning goals, teachers need to regulate their emotions by considering why and how they regulate emotions while in the classroom (Gross 2015). The act of "why" and "how" teachers regulate emotions are understood as emotional strategies. Anttila et al. (2016) presented emotional strategies that control and sustain a positive atmosphere in the classroom and call for student teachers' ability to regulate their emotions. For example, hiding frustration about pupil behavior results in more productive teacher-pupil interaction.

## 2 METHODS

Eight students of one university in Surabaya, Indonesia, participated in my study. They were in the seventh semester of the English teacher education program and did not have much

experience in teaching. Furthermore, they engaged in a four-week teaching practicum in several schools in three cities: Surabaya, Sidoarjo, and Gresik. Due to a post-pandemic situation, the teaching practicum was conducted in blended or hybrid learning. These two types are deemed to offer an online learning environment since the teaching process is conducted by combining face-to-face and virtual learning environments and online courses.

The selected participants were the ones who fulfilled some criteria. First, they are undergraduate students in the English department and have passed some university subjects related to ELT. Second, they taught in three different school areas, namely junior, senior, and vocational schools. Third, they conducted the teaching and learning process in an online learning environment since online learning activities and interaction became the focus of this study. The last, they were willing to participate well in the research.

This study uses two instruments: an observation checklist and interview sheets. An observation checklist was used to observe the online teaching video. It was used to get data about the practical strategies employed by the participants. Eight teaching videos were taken and used to answer question number 1.

Meanwhile, an in-depth interview was conducted with eight students: four males and four females. It was used to answer the research question or problem in this study. In other words, the questions given to the participants dealt with their teaching reflection about the strategies they implemented in teaching practicum and the reasons behind the implementation of the strategies. The questions were adapted from Chen (2019). The elaborated questions are presented in Table 1.

Table 1. The four interview questions for participants.

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Interview Questions

1. Are you angry with students who misbehave? Why?
  2. Do you think that it is necessary to hide frustration with students' misbehavior? Why?
  3. Do you show your happiness if students could follow your lesson? Why?
  4. Do you feel sad and disappointed if students could not follow the lesson? Why?
- 

In addition, the interview was conducted in guided and informal conversation. The informal conversation aimed to obtain additional information about certain information discussed in the guided interview.

The data were collected by recording an online teaching practicum and conducting interviews. During the observation, I took notes regarding the participants' emotions in their practices. Based on both eight recordings and notes, I wrote up observation accounts.

Moreover, a 20-minute online semi-structured interview with each of the eight participants was conducted after the online teaching practicum. It was conducted in English, but they were also encouraged to speak in Indonesian during the interviews if they could clearly explain their emotions involved in the practices, including the challenges and solutions. The interviews were audio taped and transcribed.

Meanwhile, the procedures taken to analyze the data are as follows

a. When I analyzed the classroom observation data, I repeatedly read observation accounts and watched the videos, focusing on teachers' and students' activities and interactions. It was then described to identify the participants' emotions and how they regulate them in the online teaching practicum. It aimed to support the interview result to find the challenges in their practices that can arouse their emotions. It also presented the solutions they take to regulate their emotions

b. To analyze data collected from the interviews, I repeatedly listened to the interview tapes and read the transcripts. I wrote up the participants' learning and teaching experiences

as short narratives. The relevant participants would read each narrative. After receiving feedback from each participant, I made changes to clarify or correct points I had misunderstood.

### 3 RESULTS

Most participants' responses to interviews were that they did not need to get angry by raising a voice, for example, to students who broke the rules because they wanted to build a good atmosphere in an online class. Only a few said they raised their voice when students' behavior could not be controlled. The teaching video showed they kept using normal intonation when they gave warnings to a misbehaving student. They argued that they tried not to scare students and avoid the tense situation as participant 1 stated, "Usually, I gave them questions instead of raising my voice because I did not want them to hate me." Meanwhile, Participant 6 explained:

*"If I heard any noise, I asked students to open their camera. I would wait for them to keep silent, then focus on materials".*

On the other hand, participants 3 and 5 emphasized that they raised their voices at students' misbehavior after the second warning.

Almost all pre-service teachers agree that staying quiet about students' misbehavior should apply in online teaching practicum. They were concerned about staying quiet about students' misbehavior because they (students) merely tried to get attention. On the other hand, the rest explained that they prefer to warn and advise students than stay quiet. It was reflected in their teaching practicum. Half of the participants kept quiet about students' misbehavior, such as making funny expressions to attract others' attention, ignoring the teacher's instruction, and making noise. Participant 2 emphasized, "I could understand them when they did not open the camera in my class because they might have a bad internet connection." Then, she added her statement proudly that she had a strategy to make students open the camera, for she would give a question to those who closed the camera. It worked and made her happy.

Besides, the uniformity between the result of interviews and observation also revealed that most participants view that showing their sadness and disappointment when students do not answer their questions is not essential. It was reflected in the practicum when a student did not answer the question; the participants would distribute it to another student. They tried to make students able to answer the questions by giving a clue. Nevertheless, participant 2 could not veil her sadness and disappointment by posting sad emoticon expressions in the chat box.

### 4 DISCUSSIONS

In handling students' misbehavior, student teachers tried very hard to regulate their emotions by staying quiet. Even when they gave warnings, they kept using normal intonation since they viewed it to keep the class in. It implies that the participants employ the feeling suppression strategies, as Taxer and Gross (2018) assert that suppression is used to hide negative emotions in response to students' bad behavior. Besides, they also applied a strategy to avoid negative emotions by thinking about the cause of why students could not open the camera in classroom activities. Moreover, situation modification strategies were applied by giving a task to avoid students' boredom and difficulties and the student teachers' bad feelings (Taxer & Gross 2018).

Moreover, some participants seemed challenged to regulate their emotions toward misbehavior students. In this regard, they prefer to give advice and show students' inappropriate

behavior rather than stay quiet. They also showed their anger by raising their voice or giving warnings and punishment. Their challenge was mainly attributed to students' self-discipline since they lacked discipline in submitting the work on time. Further, students' unwillingness to open the camera made the student teachers get difficulties monitoring their activities during a class study session. They thought that the strategies were needed to manage students' misbehavior. This condition demands them to generate more ideas and strategies to help them create a broad range of coping and problem-solving skills (Anttila et al. 2016).

Likewise, student teachers could not hide their frustration with students who misbehave. Their frustration was expressed in their facial expressions, a deep breath, and a sad emoticon in the box chat. Thus, it is challenging for student teachers to manage their emotions in an online teaching practicum. These negative emotions should be avoided to build a positive atmosphere and effective classroom interactions.

Meanwhile, student teachers were able to regulate their emotions by showing happiness and avoiding the feeling of sadness and disappointment. Their smile and support for students in learning expressed their positive emotions. Anttila et al. (2016) presented that to promote future teachers' occupational well-being, student teachers need to learn to identify their emotions and regulate them to cope with work-related stressors and create inspiring learning environments for their pupils and themselves.

Eventually, student teachers seem to be aware of the influence of their emotions on their students. They tried to regulate their emotions to change students' behavior and emotions. Several strategies were applied to avoid negative emotions in handling students' misbehavior. Feeling suppression is identified as the most frequent strategy employed in online teaching practicum. Nevertheless, they also remain showing their anger and frustration by raising their voice, giving warnings and punishment, taking deep breaths, and being sad.

## 5 CONCLUSIONS

For inexperienced teachers, examining how student teachers' emotions are involved in online English teaching practicum is significant since the challenge is more complex due to educational change or reform. The most challenging experience is attributed to students' lack of discipline. The present study found that student teachers employed emotional strategies to regulate their emotions. Feeling suppression is identified as the most frequent strategy employed in online teaching practicum. Nevertheless, they also remain showing their anger and frustration by raising their voice, giving warnings and punishment, taking deep breaths, and being sad.

Thus, the findings are essential for student teachers to sharpen their emotional regulation competence. They can apply emotional strategies to avoid negative emotions. As for the teacher educational program, the negative emotions experienced during the teaching practicum can be an informative note for more attention to the student teachers' emotional regulation competence. Henceforth, better courses can be designed to prepare student teachers for future careers.

This study has two necessary limitations. First, since each participant was observed only twice in a session lasting 25-30 minutes, repeated observations over a long time can provide more reliable data. Eventually, the school context where the student teachers conducted teaching practicum and the students involved could affect emotional practices. Thus, conducting a similar study in various school contexts may yield more fruitful information about the student teachers' emotional practices.

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## Fanfiction as literacy practices in rainbow Rowell’s “Fangirl”

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**ABSTRACT:** Fan identity is frequently associated with negative connotations, such as weird, obsessive loner, passive consumer, and fanatic. However, fans nowadays are not passive consumers. They engage in literacy practices, one of which is producing fanfiction. This paper explores identity reconstruction in fanfiction through Cath Avery, the main character in Rowell’s *Fangirl*. Using New Literacy Studies as a lens and the concept of figured worlds, this paper argues that fanfiction enables Cath to reconstruct her fan identity into a more positive and creative one as she becomes a well-known writer in cyberspace. Moreover, fanfiction serves as empowerment for Cath through a separate identity in her personal life. The result shows that the literacy events in the novel reveal the identity reconstruction of Cath Avery. She creates a new-figured world of a fan into a more positive one from the literacy events and practices. It can be concluded that Cath confronts her negative positional fan identity and figures out her figurative identity through fanfiction as her literacy practices.

### 1 INTRODUCTION

Fandom today is not a passive community as it is mainly represented before. Instead, they produce creations to participate in the texts they have read. Fans create many kinds of artifacts, such as fan art, fanfiction, fansubbing, etc. These creations of fans show that fandom engages with literacy practices, for instance, the activity of reading and writing fanfiction. The term fanfiction refers to the fan’s creative writing and literacy practice (Bahoric & Swaggerty 2015; Kelley 2016) that borrows characters, plots, settings, and other elements from the original text (Thomas 2011). Fans publish their fanfiction in the fanfiction forums or blogs for free. Thus, the activity of writing fanfiction is voluntary.

Although fans these days show that they are also creators through their literacy practices, the term ‘fans’ still carry negative connotations. The original word of a fan abbreviates from the word ‘fanatic’, which means “religious and political zealotry, false beliefs, possession, and madness” (Jenkins 1992). Fans are often stereotyped as obsessive, loners, lack of control, and passive consumers of popular culture texts (Grossberg 1992; Jenkins 1992; Jenson 1992). The media represent them as obsessive, freak, and weird people who have a deep attachment to their favorite celebrities or famous figures. We can see that fans are often positioned in the negative characteristics made by society. In other words, the identity of fans tends to be labeled with negative characteristics for a long time.

Unlike previous studies, this paper aims to explore how fanfiction can reveal and reconstruct Cath’s fan identity in Rowell’s *Fangirl* by using figured worlds theory from the lens of new literacy studies. In fact, the representation of literacy in the novel and other popular culture texts can reveal the identity of the characters (Williams & Zenger 2007). However, the representation of a fan’s identity and literacy practices are rarely found in literary work, and the concept of figured worlds still needs to be researched in literature.

## 1.1 *Literacy and figured worlds*

Holland and her colleagues propose a theory of identity called figured worlds based on Bakhtin, Vygotsky, and actor-network theory. Figured worlds are just imaginary, ‘as if’ worlds that an individual and others collectively form. Shortly, figured worlds are the imaginary realm where people are assigned to some actions and outcomes (Holland et al. 1998). These actions are valued by others based on social and cultural constructions.

Two concepts of identities are introduced in these worlds, namely positional and figurative identity. Positional identity refers to the identities that are assigned to people by others. In other words, these identities tell people related to their positions in the lived world. Since they are connected to power relations, these identities might put people in an unfavorable position by giving them negative characteristics (Holland et al. 1998). For example, fan studies scholars have found several negative stereotypes of fans like obsessive, loner, weird, fanatic, and passive consumers (Grossberg 1992; Jenkins 1992). These positional identities of fans surely position them negatively in society. Imagine that fans are poorly treated by society, for instance, being bullied, just because they show their identity as a fan of something or someone.

However, identity is not about being assigned specific characteristics by someone else. People can figure out their identities by using figurative elements related to culture, which Holland et al. call figurative identity (Holland et al. 1998). To contest the negative positional identity, Holland and her colleagues suggest the use of cultural artifacts. They can be objects, narratives, symbols, and so on that have collective meanings in society. Once people use cultural artifacts, they can prove to other people that they are not what people thought about them before.

There are also figured worlds of literacy. People can be identified by their writing, being literate or illiterate, and what they read (Bartlett & Holland 2002). Here, cultural artifacts are essential in building the relationship between identities and literacies (Bartlett 2005). Cultural artifacts in literacy include pens, books, stories, creative writings, and so on. The student might use a book to confront her positional identity as a stupid student into a talented student. It is the same with a fan who might use her fanfiction or fan art to contest the negative labels as a fan.

## 1.2 *Literacy and identity in popular culture*

Literacy and identity connect with each other. We can see it from the concept of Discourse proposed by Gee. According to Gee, Discourse is an ‘identity kit’ that people are socially recognized for following specific instructions like how to talk and write (Gee 1990). People practicing literacy might reveal whom they are based on what they read and write. It shows that literacy is connected to identity. Not only are they connected, but there is also an area called ‘literacy and identity’ studies.

Fandom refers to a group of people with the same interests. Fandom as popular culture can relate these two elements through fans’ literacy practices in cyberspace, namely writing and reading fanfiction. Like the old literacies, literary and fandom scholars have found that fanfiction can be considered a “valuable literacy practice” (Leigh 2020). By creating fanfiction, fans can negotiate the identities they want to show the readers. Identities, in this sense, are not specified into gender, sexuality, or race but how they want to represent themselves through these literacy practices.

For instance, Korobkova and Black’s research on One Direction fans’ literacy practice show that they want to represent themselves differently on Wattpad as their fanfiction platform (Korobkova & Black 2014). Instead of identifying as a fangirl with a negative stigma, one participant negotiates her identity as a serious writer. The identity of a ‘serious writer’ has more favorable characteristics and a sense of empowerment for an individual.

In another research, Black found that fanfiction can be used to identify some particulars identity and community (Black 2006). Fans can promote their heritages and communities by putting these elements on their fanfiction characters, settings, and even plots. The author notes that one of the fanfiction elements also shows the authors' identities that they want to share with their readers (Black 2006). It can be concluded that there is some participation among fans in the fanfiction forum, and each of them can play specific roles.

Kelley (2016) observes a fanfiction writer called Chivalric on a Harry Potter fanfiction website named *Sycophant Hex*. She argues that fanfiction can depict the writer's identities from race, gender, class, sexuality, and language to nationality in the online space. Moreover, she also finds how *the Sycophant Hex* website and other fanfiction communities break the stereotype of authorship, which says that authors tend to be lonely and someone who gets the original idea from drinking a coffee. Instead, this website identifies itself as a "personally-engaged community" that never stand alone (Kelley 2016).

## 2 METHODS

This study will analyze a young adult novel, *Fangirl*, by Rainbow Rowell. It seeks the identity reconstruction of the main character named, Cath Avery. To understand more about the nature of literacy, New Literacy Studies (NLS) will be used as the lens since the main character uses her literacy practices to reconstruct her fan identity. Thus, the theory of figured worlds will be employed to find this issue.

A close reading of the novel collects the data. The first data shows Cath's literacy events and practices by writing fanfiction. The second data is Cath's identity. To analyze the data, the researchers look at the causality relationship between the data in order to know the identity reconstruction process done by Cath, both in cyberspace and in her personal life. Moreover, the theory of the figured world will also be used to know the identity reconstruction of the main character.

## 3 RESULTS AND DISCUSSION

### 3.1 *Identity reconstruction in cyberspace*

According to Black (2008), fanfiction sites that rely on virtual space provide fans with a way to negotiate their new identities. Fans can present themselves without being forced by someone else. They usually create new online identities by using a pseudonym or pen name. This is what Cath does in cyberspace. As a fan of the Simon Snow book series, Cath Avery engages a lot in the fandom practice. She does not only read the whole series but also creates an account in the fanfiction forum called FanFixx.net. Under the name of 'Magicath' as her online identity, Cath is the author of many fanfictions. She currently writes a fanfiction series called *Carry On*, which tells about the characters' journey from the *Simon Snow* series. By using a pseudonym in the fanfiction forum, Cath tries to represent her new identity in cyberspace.

The first literacy event depicted in the novel is writing an author's note in the fanfiction forum. An author's note is a post that the author writes to inform her readers regarding her fanfiction. It can be the information about the latest chapter that she wants to post or just a general chat to interact with her readers. In this event, she is seen to apologize because she cannot upload the latest chapter of *Carry On*. She has some personal matters in her personal life. The literacy event is depicted below.

*"Hey guys, she typed. Sorry about yesterday. First day of school, family stuff, and so on. Today might not happen either. But I promise you I'll be back in black on Tuesday and that I have something especially wicked planned. Peace out, Magicath."* (Rowell 2013)

According to her note above, besides apologizing to her readers because of the delay, there is an identity reconstruction. A fan's identity is often represented as an obsessive who does not have a personal life. A fan is someone who only cares about her/his idols. However, from her author's note, Cath tries to negotiate that fan also has a personal life outside her fandom life. She still prioritizes her personal matters from how she writes, "*first day of school, family stuff, etc.*" Thus, we can see there is a new world of a fan. What people see a fan as an 'obsessive loner' is her positional identity. However, she confronts it through the author's note which can be considered an artifact.

*"Cath opened her FanFixx account and paged idly through the comments. There were too many to respond individually, so she posted a general, "Hey, everybody, thanks—too busy writing to write back!" then opened up the draft of her most recent chapter . . . ." (Rowell 2013)*

After writing an author's note, Cath continues to write and check the latest chapter of *Carry On*. This is the literacy practice that she always does in her life. In the fandom context, she is doing a fan culture, namely writing slash fanfiction of her favorite book characters. Slash fanfiction refers to the fan production of fictional love stories with same-sex characters (Jenkins 1992). It can be proved through this citation below.

*"It's not just for him," Baz said, running his long fingers over his mother's name. "It's for Watford. It's for the World of Mages." (Rowell 2013)*

These two literacy events that happen at the same time reveal her identity reconstruction in cyberspace. Since she receives many comments, we can see that Cath's identity in the fanfiction forum is a famous writer because her fanfictions get five thousand hits for one chapter (p.51). Moreover, the total number of visitors on her page is counted as more than thirty thousand visitors just in one day.

Here, Cath creates her figurative identity as a famous fan and writer in the fandom. However, Cath does not immediately accept that identity. Instead, she tries to negotiate that she is more than just a weird fan through her literacy practice in cyberspace.

*"Reagan wouldn't believe-or understand-that Cath wasn't just a Simon fan. She was one of the fans. A first-name-only fan with fans of her own. If she told Reagan that her Simon fics regularly got twenty thousand hits . . . Reagan would just laugh at her." (Rowell 2013)*

The narration above proves that Cath is a famous writer in the Simon Snow fandom because her fanfictions get twenty thousand hits. Her fans even make and sell a t-shirt based on *Carry On* fanfiction. She also has a celebrity status in the forum since she has her own fans through her online identity as a Cath. It means Cath 'self-authors' herself with this identity both as a fan and a writer. She creates her own figured identity as a famous writer who has her own fandom. Her new identity in cyberspace confronts the negative identity of a fan, such as a weird person, like what her roommate says about her.

Moreover, Cath also represents herself as a creative writer with the fact that her fanfictions receive some awards like "*Tastes Like Canon*" and "*Best in Snow*" (Rowell 2013). These awards prove Cath's fanfiction and writing skills cannot be underestimated.

The literacy practices and events in cyberspace which are writing author's notes and fanfiction, reveal that fans nowadays are not passive consumers. Fandom studies scholars like Jenkins have shown that fans are not passive consumers anymore. However, they actively participate in responding to the media they consume, or this is what he calls participatory culture (Jenkins 1992). Cath produces a lot of creative works in the forum, meaning she does participatory culture in the fandom. In the context of the figured world, Holland and her colleagues call it figured identity (Holland et al. 1998), which means Cath negotiates her fan identity as an active consumer through her literacy practices in the fandom.

### 3.2 Identity reconstruction in personal life

Cyberspace might create a different identity for someone in real life. This is what happens with Cath Avery. While Magicath has a prestige status or identity as a well-known fanfiction writer in the fandom, Cath is just a girl who lacks social life because of her traumatic events in the past. In the novel, it is seen that Cath tends to be anxious about everything that she has to do in real life. She also has a traumatic experience of being abandoned by her mother, so she lives with her twin sister and her father. In the university, her twin sister, who used to write Simon Snow fanfictions with her, does not want to live with her anymore. Thus, she relies on her fandom life as an escape from her real life. Here, her literacy practice, writing fanfiction, helps her to forget her problems in real life.

Fanfiction as identity reconstruction is seen in her personal life as well. Cath has a new friend in her dorm, Levi, who will be her boyfriend. They are close to each other because of Cath's fanfiction. She reads her fanfiction aloud to her boyfriend, Levi. The activity of reading aloud is the next literacy event depicted in the novel.

*"I do like the story. And I like the way it relaxes you. You never finished reading me the rabbit one, you know. And you've never read me any from Carry On."* (Rowell 2013)

Fanfiction not only relaxes Cath's mind in this case but also shows that she can create a new relationship. Since the identity of a fan is often stereotyped as a loner who only cares about her/his favorite figures, Cath confronts this stereotype by using her fanfiction. In this case, she uses fanfiction as a tool to interact with Levi. Although Levi is not as familiar with fandom as Reagan, he still enjoys listening to Cath when she reads him some of her fanfictions.

Fans who have the same interests usually interact with each other in cyberspace and real life. There is also the moment when Cath meets one of her readers in the cafeteria. In this scene, they interact because Cath wears her *Carry On* t-shirt while eating in the cafeteria. They discuss Cath's fanfiction without knowing that Cath herself is the author. It feels empowering for Cath. However, in this sense, an opposing identity exists between a famous fanfiction writer and an ordinary student.

*"... I know that Magicath wouldn't exist without GTL. But now, I think I love Magicath more. Like she might be my favorite author. And she's never even written a book ..."* (Rowell 2013)

Since there is a talk or discussion about literacy in the scene, the narration above can be considered a literacy event. The event of talking about fanfiction above reveals empowerment because of literacy. Cath's fanfiction attracts many people, including the girl she meets in the cafeteria. That girl even says that Magicath might be her favorite author. Her online persona even steals the popularity of the real author of *Simon Snow* the series, Gemma T. Leslie (GTL).

However, this empowerment only stays for her Magicath identity. In her personal life, she is just an ordinary student and a fan since she does not reveal her online identity to other people quickly. Thus, Cath, in this scene, realizes how strong the impact of fanfiction is on her life. Although she never writes a book using her real name, her online persona gets the spotlight. This is what Cath Avery cannot achieve in her personal life.

Because she cannot overstep the celebrity status of Magicath in her personal life, she still negotiates her figurative identity as a skillful writer in college. Cath joins a Creative Writing class with a remarkable admission. The fact that she gets the privilege to join the class shows that Cath has outstanding skills as a writer outside her fandom life.

Some literacy events are depicted in her college days, such as writing assignments in her Creative Writing Class. There is a moment when she submits her fanfiction for the class assignment. Her professor accuses her of plagiarizing Gemma T. Leslie's works. This is

where Cath negotiates her fan's identity as a skillful writer by uttering, ". . . *I know how you feel about fanfiction, but that's what I want to write. That's where my passion is. And I'm really good at it.*" (Rowell 2013). Because of her literacy practice in the fandom, writing fanfiction, Cath figures that she has a skill in writing fiction stories.

Fanfiction offers its author to explore various genres through creative works. Some research shows how fanfiction can upgrade students' writing skills in school (Bahoric & Swaggerty 2015; Leigh 2020). This skill can be a tool to reconstruct Cath's identity in her personal life. Although she has difficulty doing the final assignment in the creative writing class, in the end, she can achieve the status of a skillful writer using her real name.

Furthermore, on the novel's last page, it is portrayed that Cath's fiction story in the creative writing class wins the "Underclassmen Prize" (p.460). Without her literacy practice in writing fanfiction in the fandom, Cath will not achieve this status in her personal life. Therefore, she portrays that a fan can be a skillful writer outside the fandom life, rejecting the fan's positional identity.

#### 4 CONCLUSION

In conclusion, there is a relationship between literacy and identity. From the novel, Cath Avery successfully builds a positive fan identity. By writing an author's note in her account, she shows her figurative identity as a fan who still prioritizes her personal matters. She is also depicted as a well-known author because more than a thousand people read her fanfictions. By writing fanfiction, she gets a celebrity status that she cannot achieve in her personal life. Cath has her fandom, a group of people who like her fanfictions. It also shows that she is an active consumer.

Cath also feels the empowerment she receives from her literacy practice related to fanfiction. In her personal life, she is seen getting closer to her boyfriend through the literacy event of reading aloud. She also encountered her fan in the cafeteria, revealing that she is a famous writer. Lastly, on the last page, she writes a fiction story under her real name. In this literacy event, she gets a prestigious award in her college. It portrays that she is a skillful writer both in the fandom and personal life. Furthermore, these events in cyberspace and personal life reveal that Cath creates a new-figured world as a fan. She confronts her negative positional identity and creates her figurative identities through fanfiction as her literacy practices.

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## Source language in third language acquisition for BIPA students

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**ABSTRACT:** This study aims to analyze the source language in third language acquisition (TLA) on Indonesian language acquisition for *Bahasa Indonesia Bagi Penutur Asing* (BIPA) students. The subjects of this study were BIPA Unesa students with the same study period but different language backgrounds. The data collection technique used is the elicitation technique. The lexical transfer is used as an aspect in determining the source language in the TLA. The results of this study show that the source of the language in Indonesian acquisition as L3 can be determined from three factors, namely, language distance, recency, and L3 language background proficiency. The closer the L1/L2 typology is to L3, the higher the probability of becoming a source language. The higher the proficiency level at L1/L2 in L3 acquisition, the higher the probability of becoming a source language. The L2 proficiency by L3 learners will have a high potential for being used as a source language in L3 acquisition.

### 1 INTRODUCTION

In recent decades, third language acquisition (TLA) has begun to be recognized by linguists, especially in the field of language acquisition in the case of multilingualism. TLA is an exciting field of study because it is considered to go beyond the study of second language acquisition (SLA) (Cenoz et al. 2001). SLA is associated with language acquisition in the context of bilingualism which acquires a second language after the first. On the other hand, TLA is associated with language acquisition in the context of multilingualism, the subject of which is speaker multilingualism (Cenoz 2001; Idris et al. 2020; Jessner & Cenoz 2019).

The third language (L3) is defined as the language that is being acquired after a person has obtained a second language (L2) (Bardel & Falk 2007; Cenoz 2013). L2 can be in more than one language (Hammarberg 2018). To get the term L3, L2 in multilingual is denoted L2<sub>n</sub>. If a multilingual person acquires a fifth new language in the order L1 > L2 > L3 > L4 > L5, it can be denoted as L1 > L2<sub>1</sub> > L2<sub>2</sub> > L2<sub>3</sub> > L3 in TLA.

The complexity of the TLA study is the main difference between SLA and TLA. In SLA, L2 learners only have one source language, namely L1. However, in TLA, L3 learners have several possibilities in using their L1/L2 (Alonso et al. 2020). In some instances, L1 can be a source language in increasing vocabulary. On the other hand, other languages can be source languages for improving grammar in L3. It happens because various languages interact in the L3 learner's thinking process.

TLA studies have a higher complexity than SLA because TLA can be studied from psycholinguistic and sociolinguistic perspectives. From a sociolinguistic perspective, increasing mobility and global communication make studying multilingualism widespread. From a psycholinguistic perspective, TLA was also able to show significant differences between monolingual, bilingual, and multilingual speakers in terms of competence and performance (Maluch & Kempert 2017).

The complexity of the TLA study is also found in the analysis of the relationship between language background learners. The SLA study only sees the L1-L2 relationship. However, the TLA study looked for an association between L1 and L2 in L3 acquisition. This relationship can be expressed with the notation  $L1 \leftrightarrow L3$  or  $L2 \leftrightarrow L3$  (Cenoz 2003), and it can even be illustrated by  $L1 > L2 > L3$  or  $L2 > L1 > L3$  in the TLA process (Solis & Paz 2015). So, TLA is an exciting study because it deals with more than one language that can be used as a source language.

Determining the source language in the TLA study is more challenging than determining the source language in the SLA (definitely L1). The source language in TLA is distinguished by various factors: psychotypology, L2 status, recency, and proficiency. However, the recency and proficiency factor is the main criterion for determining the source language (Williams & Hammarberg 1998). Recency is defined as the last majority language used by the learner before obtaining L3 (De Angelis 2007).

In determining the source language, Cenoz examined the language distance, age of acquisition, and L2 status in TLA, which resulted in language distance having a more decisive role in determining the source language than age and L2 status (Cenoz 2001). It was influenced by psychotypology.

On the other hand, Cal & Sypiańska investigated the effect of the L2 level of proficiency (LoP) on TLA with the result that L2 (LoP) had an impact on the L3 level of proficiency (LoP) (Cal & Sypiańska 2020). This is supported by Ringbom's study which states that proficiency in the source language determines the transfers made by the learner in L3 production (Ringbom 1987).

Language transfer has a central aspect of TLA studies. Language transfer has become an essential issue in SLA and TLA studies in the last few decades. The transfer phenomenon can be used as an analytical leap in SLA and TLA. Transfer is believed to be able to provide an understanding of learner strategies for overcoming L3 understanding (Fuster 2022). Transfer in TLA studies is described as a process between L1 and L2, L2 and L3, and L1 and L2. The transfer in question is lexical. The lexical transfer is articulated as code-switching, both lexical and grammatical, in L1 and L2 in TLA (Kholiq & Luthfiyati 2020). Lexical transfer has four types: lexical transfer adapted, non-adapted, and semantically adapted (De Angelis 2007).

The lexical transfer was non-adapted as a lexical borrowing in L1 or L2 that is intact in L1 or L2 that is not integrated with L3. Lexical transfer adapted is a lexical borrowing in B1 or B2, adapted or integrated with L3. Lexical transfer semantically is a lexical transfer whose use is not determined by its meaning in the sentence (Kholiq & Luthfiyati 2020).

Because of the limited TLA research with Indonesian as the target language, studying Indonesian acquisition as L3 needs to be done intensively (Kholiq & Luthfiyati 2020). Cases regarding the acquisition of Indonesian as L3 are often found in the *Bahasa Indonesia bagi Penutur Asing* (BIPA) program. BIPA students acquire Indonesian indirectly from their L2. However, English is used as L2n to study Indonesian because of typology, word forms, and sentence structure; English and Indonesian are close together.

From the description above, there are several beliefs about the basis for determining the source language in TLA. This study analyzed the source language in acquiring Indonesian as L3 for students BIPA program. The source language can be seen in the language proposed by Cenoz (2001) and the proficiency offered by Cal and Sypiańska (2020). In addition, the recency aspect can also be seen in the learner's skills which the dominant transfer can indicate.

## 2 METHODS

### 2.1 Subject

The subjects of this study were three BIPA Unesa students who pursued long studies with different language backgrounds. The subject of this research can be seen in the following table.

Table 1. Language background of subjects.

Subject	L1	L2 <sub>1</sub>	L2 <sub>2</sub>	L3
S1	Malay	Thai	English	Indonesian
S2	Malagasy	French	English	Indonesian
S3	Malagasy	French	English	Indonesian

## 2.2 Procedure

The data collection technique used is the elicitation technique, which is carried out with conversations using Indonesian. Conversation topics include family conditions, learning experiences in Indonesia, students' opinions about Indonesia, and comparisons between Indonesia and the country of origin. The language production of the subject was analyzed on the aspect of lexical transfer. The transfer is the basis for determining the source language in third language acquisition.

The dominant language in the lexical transfer determines the source language for each subject in language acquisition. The basis can be seen in the language distance, proficiency, or recency from the subject's language background. The analysis is used by analysis at the percentage of lexical transfer, for example, lexical transfer adapted, non-adapted, and semantically adapted.

## 3 RESULTS

The results of this study are indicated by the transfer of lexical data by the research subjects. The lexical transfer can be seen in Table 2.

Table 2. Distribution frequency term of lexical transfer.

Subject	L1	L2 <sub>1</sub>	L2 <sub>2</sub>
S1	35	6	30
%	49.30	8.45	42.25
S2	7	27	39
%	9.59	36.99	53.42
S3	4	5	32
%	9.76	12.20	78.05

The results above show that S1 performs lexical transfer to Malay as L1 more dominantly than other language backgrounds. It can be seen that 49.30% of students do lexical transfer to Malay when S1 encounters L3 knowledge gaps, but at certain times in S1 memory, they only remember lexical in L1. As the L1 of S1, Malay has an essential role in Indonesian acquisition as L3. It can be analyzed from the typology of the Malay language close to Indonesian. In addition, the language often used by undergraduates in non-formal activities is also Malay.

English as L2<sub>2</sub> for S1 has the same dominance as Malay as L1 for S1. The percentage of lexical-to-English transfers carried out by undergraduate students is 42.25%. The level is close to Malay. This dominant transfer can be caused by English being more recency for S1 before acquiring Indonesian. In addition, in the minds of S1, Malay and English, the language distance is close to Indonesian, so the language acquisition process in S1 is L1 > L2<sub>2</sub> > L3.

Thai as L2<sub>1</sub> becomes a language that is avoided by S1. This is possible because the language distance is far from Indonesian, and the language history of the interlocutor has a low proficiency level in Thai. However, S1 also performs Thai transfer when experiencing a knowledge gap in Indonesian as L3.

This differs from subjects with a language background whose typology is far from Indonesian. In S2 and S3, the language that has a dominant role in acquiring Indonesian is English as an L2<sub>2</sub> subject, which is 53.42% in S2 and 78.05% in S3. This dominance can be seen in the status of L2<sub>2</sub>, which is considered capable of being a word provider when S2 and S3 experience misunderstandings in L3. In addition, the interlocutor is also a lexical transfer factor to English. English, as a language that fulfills the recency aspect in acquiring Indonesian for S2 and S3, becomes the source language as shown in the dominant lexical transfer.

Master's degree with 53.42% lexical transfer to English, assisted by French in understanding Indonesian. This differs from S3, which uses English dominantly in Indonesian communication as L3. The percentage of lexical-to-English transfers made by S2 and S3 can determine the level of proficiency L2<sub>2</sub> in acquiring Indonesian. In addition, the S2 language memory may be higher in French as L2<sub>1</sub> than in English as L2<sub>2</sub>.

Malagasy as L1 becomes a language that S2 and S3 avoid. It also has the same Thai status as L2<sub>1</sub> for S1. Malagasy is considered to have a language distance that is far from Indonesian. Grammatically, Malagasy is close to Indonesian, as in affixation and word formation processes which have similarities with Indonesian. However, in the mind of S2 and S3, Malagasy has a typology far from Indonesian.

## 4 DISCUSSION

### 4.1 *L2 Status in determining source language on TLA*

L2 status referred to in this study includes language distance and recency. Cenoz's research states that language distance greatly determines the source language, manifested in the phenomenon of language transfer Cenoz (2001); also supported by the current study. Language distance is dominant as the source language because of the psychotypical factor proposed by Kellerman (Cenoz 2001). Psychotypology has a significant role for L3 earners because it can have a role as the leading supplier (Hammarberg 2001). This was also confirmed by Permadi, who stated that the similarity and the far difference in words between L1/L2 and L3 were fundamental in obtaining L3 (Permadi et al. 2022). In addition, language distance can be an alternative solution for obtaining L3 when there is a gap in understanding in producing L3.

Malay and English, in S1's mind, have a close language distance. Indonesian is used as the leading supplier in acquiring Indonesian. Supposedly, it is not only the concept of L2 status that is the focus of TLA analysis but also the L1 status that needs to be considered. It may be necessary to define the L2 status constraint clearly. L1 status either includes the concept of L2 status or not.

On the other hand, languages that have language typologies that are far from Indonesian tend to be avoided and do not make a crucial contribution to the acquisition of Indonesian. This can be seen in Thailand as L2<sub>1</sub> for S1 and in Malagasy as L1 for S2 and S3. The two languages are considered distant for each subject, so the role of the two languages is only as a supplement when the dominant language cannot help L3 learners.

In addition to language distance, recency is also considered in determining the source language in TLA. Recency, conveyed by De Angelis, is intended as a language that has just been mastered before obtaining L3 (De Angelis 2007). The order of the language background is very decisive. The results of this study support that recency is an essential factor in determining the source language in TLA. The results showed that English as L2<sub>2</sub>, mastered

sequentially before Indonesian, was the most dominant in acquiring Indonesian as L3. This is influenced by the fact that English is more recency controlled by the subject, and the subject thinks that the interlocutor also controls English.

#### 4.2 Proficiency level in determining source language on TLA

The results of this study also support that the proficiency level in the language background in TLA can be used as a factor in determining the source language. A high level of proficiency in an L3 learner language background will determine fluency in L3 production. This is in line with the results of research from Cal & Sypiańska which states that proficiency determines the dominant language in TLA (Cal & Sypiańska 2020).

Language proficiency can also be determined from the level of working memory (WM) owned by L3 learners (Schweitzer & Shekari 2019). This WM affects the level of language proficiency in obtaining L3. In addition, L3 learners who have suitable L1 or L2 proficiency will find it easier to get L3. The results of this study indicate that masters with English proficiency as low as L22 will use another language they master, in this case, French as L2<sub>1</sub>, for the production of Indonesian as L3. This will indicate that language proficiency also affects TLA.

## 5 CONCLUSION

From the description above, it can be concluded that the language source in Indonesian acquisition as L3 can be determined from three factors: language distance, recency, and L3 language background proficiency. The closer the L1/L2 typology is to L3, the higher the probability of becoming a source language. The higher the proficiency level at L1/L2 in L3 acquisition, the higher the probability of becoming a source language. The latest language mastered by L3 learners will have a high potential to be used as the dominant language (source language) in obtaining L3.

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## Multilingual children's language use: The case of “the return of Superman” show

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**ABSTRACT:** This research has conducted descriptive qualitative method and Barron-Hauwaert's theory about multilingual children's language pattern usage, in order to investigate multilingual children's language use in the community through the influence of their closest environment represented in 'The Return of Superman' variety shows in Korea. The subject of the study is 'Park Naeun' as well as her multicultural family. The researchers would use the online documentation technique to collect data from selected videos on YouTube channels, as described in the three research questions. The results from the findings demonstrate that Park Naeun was capable of speaking using both the majority and minority languages as a multilingual child. The influence of parents' language on the children's language is a signal that contributes to the success of the children's language-learning process. When parents can maintain their children's first language, they could also maintain their children's next language acquisition. This analysis revealed that Park Naeun changed their language use for many reasons: politeness, meaningful conversations, and similar perceptions.

### 1 INTRODUCTION

Multilingualism is derived from the Latin words *multus* and *lingua* which means 'many' and 'language'. From those notions, we could describe that a multilingual individual is a person who has the capability to talk in more than two outside of their mother tongue with various degrees of competencies in each language (Dewaele 2015). Wei (2020) states that multilingualism can be seen as a societal phenomenon and as an individual phenomenon. Multilingual individuals have language preferences to use that they consider their interlocutors would understand. The only limitations and possibilities for them of having language choice would be related to the interlocutor's potential language background and the multilingual speaker's linguistic repertoire itself. It should be acknowledged that language choice would always be noticeable in some particular context and create social meaning in accordance with the context. When multilingual individuals have already built their habits of language choice relations in communication, they have to decide whether they would remain using their pattern of language preference with their recipient or they would adjust the third party who is unable to participate in their pattern of language. It shows multilingual individuals can show their personalities of flexibility and open-mindedness while communicating (Dewaele & Botes 2020). In terms of language choices, flexibility against limitations and possibilities during communications also exists, when the interlocutors are bilingual or multilingual. Therefore, they could use a straight perspective of understanding because they were able to use the same particular set of languages. Despite all the matters of interlocutors or specific language choice in particular interactions, a bilingual or multilingual who is

capable of speaking in many languages would be able to produce utterances in one language to produce mixed utterances in other languages easily and fluently.

Generally, a child in their early ages would be able to speak two languages until they grow older: their national language and their native language. Many young bilinguals never really start to speak two languages, but they just speak in one language that they first acquired. These languages are commonly known as the mother tongue (Grosjean 2020). Moreover, both of these languages are being used broadly in their family and the community (i.e., regional or local language). The phenomena of bilingual or multilingual children could exist through many factors such as the manual learning processes, the influence of their parents, and the community environment. However, children at an early age, like toddlers, are still unable to learn independently. Therefore, the influence of their family and community plays an absolute and major role in their language learning processes naturally (Fishman 2020; Maunah 2019). The present study focuses on multilingual language use by individuals including the patterns which represent a variety of language expertise. The researchers also want to reveal how they acquire those many languages, especially in children.

The study of multilingual children's language use is under the study of language acquisition. According to Campbell, language acquisition is a language learning process in their mother tongue. As a multilingual who is capable of speaking more than two languages, the development of language acquisition increases widely. The term multilingual could never be separated from the term 'Bilingual'. Bilingualism always becomes the earliest stage of language expertise before such a person becomes multilingual. Being multilingual means an individual can speak in three languages or more, and must be able to master two languages previously. Therefore, being multilingual is bilingual either, but being bilingual could not always be multilingual. Several previous studies have been done in this field of research.

First, Li Wei's (1994) analyzed the study of language use in three generations and two languages in one family in the Chinese community in Britain through observation of linguistic choice. The result demonstrates that the speaker tends to speak in Chinese and English to interlocutors. The only exception is when it comes to speaking with the oldest ones within the family such as female grandparents because these interlocutors would just be able to talk in Chinese. In both generations of parents and grandparents, women are more likely to have Chinese language-oriented rather than a man.

Second, De Houwer (2007) investigated the input patterns of parental language and children's bilingual use by conducting a survey on 1,899 families. The results indicate that the children within all of those families were used to speak majority of the language rather than the minority of a non-universal language. Therefore, when in the home domain there is one parent who speaks using the minority language collaborating with one parent who speaks the majority of the language, the children would have success in acquiring the patterns of both languages.

Third, Slamet Setiawan (2013) examined children's language in the bilingual community of East Java, Indonesia by utilizing both quantitative and qualitative approaches. The result demonstrates that in language proficiency, village children have a higher positive ethnic language tendency rather than town-children. The opposite result also has been found in terms of language use and attitudes. From these several previous studies, the researcher would not examine children's language proficiency in such a wide range of communities as the previous researchers did. Little is known about the analysis of bilingual/multilingual children's language use in media like YouTube. This present study focuses on examining multilingual children's (Park Naeun) language use in the community, through her daily interaction represented in the Korean variety-reality show called *The Return of Superman* (TROS). Moreover, it should be highlighted from the previous studies that multilingual language choice pattern usage in the family could be linked to their language patterns, parent's language input, and community environment, which may urge multilingual individuals to choose the right language to use whenever they have to interact with various interlocutors around. Thus, this study aimed to investigate multilingual children's language



use represented in the Korean KBS TV show ‘*TROS*’ by leading it into some questions as the main focus examination approach of the research: 1) What are the language patterns used by multilingual children represented in the show? 2) How is the parent’s influence on multilingual children’s language represented in the show? 3) How is the multilingual children’s use of language in the community represented in the show?

### 1.1 *Multilingual language use patterns*

According to Barron-Hauwaert (2011), multilingual children are such a great mix of various genes, environment, and parental authority as the main factors that influence their variety of languages, whether the languages start existing in the children’s world or the value and effort that the children give while learning to acquire those languages. The children could also be affected by their language maintenance by factors outside of their homes such as friends, teachers, neighbors, strangers, and others. These various factors that play an important role in children’s language acquisition would be able to give various models of their language use as well. From these colorful models of language use, they would understand the reason or purpose of when and why they have to shift their language choice patterns based on different interlocutors in their social network to get a direct understanding from both sides.

### 1.2 *Parental language input patterns*

There are strategies to produce multicultural generations in multicultural families, whether through using language norms for their children at home or controlling parents’ language use that suits their family members well (Barron-Hauwaert 2011). In multicultural families, there are general notions about the *majority* and *minority of languages* used by multilingual individuals. The majority of a language is a kind of language that is dominantly and widely used in their life. Meanwhile, a minority of a language is such a language that is being less or passively used when it comes to its usage in daily life. By and large, the majority of language identification could be recognized through the language of the environmental community where they live, whether a minority language always comes to one or both parents’ language that does not commonly exist in their society.

### 1.3 *Multilingual community education*

Language phenomenon is arguably linked to community in society, it could be associated with various specific practical activities and occupations that would result in a transcultural community around the world. In the sense of multilingual children on their language development, it is recognized as *bilingual community education* which involves the formal and informal environment. A formal community environment resembles a school as an educational space, which is a place to practice the language in speaking, writing, and reading systematically. Meanwhile, an informal environment is a space to practice language as a part of daily life, not just mechanical theories. Moreover, As multilingual children, they would tend to *switch language* as their basic common strategy of language usage characteristic. This sort of interaction is not a result of a multilingual speaker’s incapability of acquiring particular languages. However, it represents their process of interaction involving stylistic enhancement during their speech or writing between one language to other languages properly. This phenomenon is considered a ‘normal phenomenon’ in bilingual or multilingual children. Maher (2017) stated that to have this stylistic type, multilingual or bilingual individuals often have their reason to ‘switch’ such as:

- a) Giving humorous effects on their interaction speeches
- b) Adding social markers about some cultural importance. For example, is like when inserting a particular word that considered a respect marker in other languages

- c) Having a sudden exclamation
- d) Producing variance in their conversational style by using other languages
- e) Expressing certain attitudes or feelings toward interlocutors
- f) Trying to hold other people's attention and persuade
- g) Expressing uncomfortable words considered 'taboo' in other languages, so it makes the speaker difficult to say
- h) Demonstrating a particular idea, mind, or thought
- i) Giving a sign of mark, when they would alter the conversations into different topics.
- j) Having communication in private with the interlocutors
- k) Conveying a particular idiom or concept in other languages

## 2 METHODS

In this study, videos of Naeun and her family from the show '*The return of superman*' were selected online through KBS YouTube that involves Naeun's language interaction or conversations. The purpose of why the present study takes the show as the object and Park Naeun as the main subject because this show represents multilingual children's (Park Naeun) growth. This variety-reality show could be a chance to analyze the multilingual children's language pattern as well as the influence of her environment that constructs her to be multilingual from an early age. The researchers implemented a descriptive-qualitative approach since this study described outcomes in the analysis without applying any statistical method. This study consisted of exploring the problem case, understanding the background of language learning, and then writing conclusions to answer the research questions. Moreover, it should be highlighted that the researchers would not discuss the measurement of multilingual children's language competence and comprehension. The analysis of the data using qualitative methods would use codes or categorizations to get to know the patterns or themes. Related to the problem case analysis, the grounded theory would be used to support the investigations of this study as well. In this study, the researchers used documentation techniques to analyze Park Naeun and her family from the show '*The return of superman*' on YouTube. Naeun's family is a multicultural family who lives in Korea. Even if this study would talk about multicultural stuff, the researcher would not discuss mixed-marriage life. Instead, the researchers would just on the language production of the families, more specifically the language used by multilingual children. The researcher would use human resources as the instrument and use laptops and the internet as tools to collect the data. First, the researchers selected several videos of TROS from the official YouTube account. The video selected represented Naeun's capability of using each different language in her everyday interactions with different interlocutors as well. Second, the researchers analyzed the data properly addressing these points: 1) multilingual children's language pattern variability, 2) parents' influence on multilingual children's language represented through their utterances, and 3) multilingual children's language use in the community represented through their utterances.

## 3 RESULTS AND DISCUSSION

In this study, the findings and discussion results would be presented togetherly to answer the three aforementioned research questions.

### 3.1 *Children language patterns*

The pattern of language use by multilingual individuals must be different depending on the interlocutors. The way their children choose the language in which they are proficient would

give certain results of how the society in their life is being formed. Any kinds of similarities and differences in language used by multilingual children could be found by looking at the way they interact with each other in their different languages.

Table 1. Naeun’s language use with interlocutors in the home domain.

Activity	Recipient	Recipient Language Use	Child Language use
Hitting camera	Mother	English	English
Playing stickers	Mother	German–English	German–English
Requesting Dad	Father	Korean	English
Calling Dad	Father	Korean	Korean
Greeting Dad	Father	English	English
Telling doll story	Grandmother (mother’s side)	Spanish	Spanish

From those results, we could perceive that Naeun was capable of talking in four languages; English, German, Korean, and Spanish. From all of the languages that she was capable of talking in, she would use one out of those four differently according to the interlocutors around her home domain language preferences. The main reason why she could have that language pattern is that she learns how to socialize with interlocutors starting with the people who have a close bond with her such as family. From an early age, she has already faced so many different sounds and languages coming from each different families. Therefore, she was capable of getting used to it since the development of time while making adaptations to understand and acquire those languages.

This explanation is supported by the theory of De houwer which states that children could speak bilingually because the supported bilingual environment existed mostly in their home domain, this condition involves all of the closest relations the children could socialize with. So that they have much wider opportunities to have language awareness from an early age. Furthermore, we also noticed that in the middle of Naeun’s interactions, she often mixed and switched her languages at a moment (i.e., German–English). Furthermore, the theory of Barron-Hauwaert (2011) also states that the process of mixing languages becomes a hallmark feature of early bilingual development. The Mixing process happens when such particular languages are being used by both sides regularly between the speakers and interlocutors simultaneously, to get private communications and strengthen the social bonds among family members. These conditions would support them to be able to learn and acquiring many languages in their early childhood.

### 3.2 *Parent’s language input*

As the parents of multilingual children in TROS, Anna and Johoo have played such important roles in their children’s language acquisition. Both Naeun’s parents are multilingual, Naeun’s mother speaks six languages (German, English, Spanish Korean, France, and Italian), meanwhile Naeun’s father can speak three different languages (Korean, English, and Japanese). The researcher recognizes that both Naeun parents have their own language preferences that they tend to use in the home domain area.

From those findings, we understand how Naeun’s parents have already chosen the language preference that they want to influence Naeun with, despite all the languages background that they have. In the show, the researcher found out that Naeun’s mother’s side (Anna) was used to speaking with Naeun using German and English in most of the episodes, rather than in Spanish and Korean. It has happened because she knows Naeun’s father’s mother tongue is Korean and they live in Korea surrounded by Korean society as well. Therefore, Anna tries to keep her communication with Naeun by using German and English

Table 2. Mixed multilingual strategy by Barron-Hauwaert, S.

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A mix of three or more languages within the family

- Anna (Naeun’s mother) speaks 4 languages; *German, Spanish, English, Korea*
- Johoo (Naeun’s father) speaks 2 languages; *Korean, English*

Together parents speak using 2 languages; Korean and English

The family lives in the country using these languages; Korean (Ulsan) and Switzerland (Basel) Children most likely attend school in the language of the country; Korean and Swiss

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Table 3. Children’s language use in the community.

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Community	Interlocutors	Language Use
School	(a) Teacher in Swiss	German
	(b) School friends in Swiss	German
Strangers	(a) Fruit sellers in Swiss	German
	(b) Musicians	English
	(c) Korean people in Swiss	Korea
Father side’s friend	(a) Uncle Jocheul	Korea- German
	(b) Richard Windbichler	German
	(c) Sergio Escudero	Spanish - German
Mother’s side friends	(a) Aunt Kaya	German
	(b) Aunt Stevanie Michova	English

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to make her get used to those languages so that she could fit into Switzerland’s society when they have to come and stay there. The findings imply that both Naeun’s parents have a purpose to make Naeun get used to a particular language that may help her to fit into the society and environment around her. Therefore, her parents let Naeun learn the language that they have commonly used to communicate with people in their daily life naturally. These findings align with the theory of De Houwer (2007), which states that children’s capability to absorb information through interaction patterns is based on what they heard and see every day around. This kind of communication environment would affect the development of children’s language structures and the adaptations would be faster when they face particular languages frequently. Besides, the environment in the home domain, the community outside of those environments also plays a role in multilingual children’s language patterns which are to be explained in the next section.

### 3.3 *Language usage in community*

These findings portray Naeun’s language choice patterns through her interactions within a particular community. She also considers the process of switching languages based on the matter of *formal situations* and *informal situations*. Formal situations urge her to put high respect in serious conversations, for example, when she has to talk to teachers, strangers, or someone older than her. Meanwhile, the informal situations define flexible conditions that she could choose such language that she more feels comfortably within unserious conversations, that is, jokes, play, etc. Following both kinds of situations that multilingual children always bring consideration over their language use, it should also be acknowledged

the purposes of the children 'switching' toward their language on each different interlocutors. To get to know her main purposes, we could know from her utterances with some interlocutors that would be described below;

(1)

Musician = we have a rehearsal here. We're a group. We play swiss folk music and all kind of things

Naeun = hallo! (hello!)

Musician = Hello! (Hello!)

Musician = Wie gehts? (how are you)

Naeun = Es geht (I'm fine)

Musician = This is a bell for the neck of the cow

In (1), a conversation with strangers (Musician in Swiss), Naeun speaks to them in German. Meanwhile, from the first dialogue, we noticed that the musicians were capable of speaking English a little bit. Generally, if we follow the previous patterns of the findings, Naeun could barely use English back following the language patterns of her interlocutors. Nevertheless, she still uses German to respond to the musician's interactions. From these findings, the researchers could imply that Naeun was trying to take responsibility because she was in a place where the majority of Swiss people were talking in German. Therefore, the researcher recognizes that Naeun might feel that it is much better and more comfortable when speaking in German to Swiss people, especially to strangers that she does not even know very well. She respects other people's preferred language choices by using the same languages as her interlocutors. Politeness takes a role in the existence of this kind of feeling when using and choosing such languages as multilingual.

(2)

Naeun = 나는 천천히 걸는다 (I walks slowly)

Jocheul uncle = 진짜? (Really?)

Naeun = 하지만 건우는 빨리 걸는다. (But, gunhoo walks really fast)

Jo Cheol uncle = 준비가 된. 가다 가다! (Ready. Set Go, Go!)

Naeun = komm her! Oh die da (come here! Look at that!)

Jocheul uncle = was es ist (what is it?)

Naeun = Penguins

Jocheul uncle = Penguins

Naeun = ich mag das. Siehst du seine Augen und seinen Schnabel (I like it. Do you see its eyes and beak?)

Jochen = sehr klein. ist es süß? (Its tiny. Is it cute?)

Naeun = Yeah (yeah)

In (2), Naeun's language use changed from Korean to German. This conversation could be included in an informal situation. This situation was created because she felt her relations with Jocheul were so close that she comfortably changed her language use. The way Naeun adjusts her language also represents her goal to be direct with the interlocutors. Other interlocutors around Naeun's community might be able to talk in one language. Therefore, Naeun has to talk with them using the same language as they are, since it becomes the only way to communicate and to be direct with her interlocutors. However, if the interlocutors were capable of talking in other languages, it is still straight with Naeun's language background. She would tend to change her language into a language that she felt she was more comfortable speaking with.

(3)

Naeun = was ist des Farbe? (Was ist diese Farbe?) [german]

Sergio = (Laugh) En espanol como se dice? que color es ese? (what color is that in Spanish? What color is it?) [spanish]

Naeun = Amarillo (Yellow) [spanish]

In (3), it was also found that the way Naeun jokes using different language from her interlocutor's language background is considered uncommon. Sergio's language background is Spanish and Japanese, so he speaks to Naeun using Spanish. But, from her utterances, she deliberately changed her language to German which the interlocutors did not understand. As a multilingual child, this has become one of her styles to produce humorous effects in conversation. Therefore, we could conclude that the main purpose of her joking is because she wants to make meaningful conversations with the interlocutors by playing particular language usage with her interlocutors. These conditions commonly appear in informal situations. It aims to strengthen the close bond that existed between Naeun and her interlocutors.

#### 4 CONCLUSION

Naeun has four language patterns as a multilingual child. She could speak English, German, Korean, and Spanish. As a multilingual individual, Naeun's language development could not get separated from the people in the home domain which has given her wide opportunities to learn such languages. Both Naeun's parents are multilingual, so it helps her to acquire particular languages from her own parents' language background. Moreover, she also lived in two different countries; Korea and Switzerland. Therefore, the community outside of the house that she meets is getting wider as well while contributing to influencing Naeun's language development. The communication strategies used by Naeun are code-switching. Some situations urge her to switch above her language, such as norms-politeness in a formal context and play style in an informal context to build a meaningful conversation. It should be highlighted that even if she makes a language switch, she is going to use language that is still based on her interlocutor's language preference to have the same perspective as interlocutors. This current study only employed a limited number of subjects of multilingual children as data to reveal and describe her language use as multilingual and her environmental role against her language development. Suggestion for further research to be conducted in the wider area of language use, especially through the media (i.e., shows, television, movie, etc) that represent multilingual children's language patterns.

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## Language used in “Indonesia’s Next Top Model Cycle 2” TV show

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**ABSTRACT:** Manipulating the use of language in speaking can usually show the power and solidarity of the speaker. The purpose of this study is to explore the use of language, especially the use of linguistic features and strategies, which were used by the judges and participants in the talent show “*Indonesia’s Next Top Model Cycle 2*” to show power and solidarity. A qualitative method was used, taking up the conversation between the judges and the participants, which can be seen from the transcript of the dialogue on the YouTube channel. The results showed that the relationships among the judges were superior and solidary and superior and not solidary, whereas the relationships between the judges and the participants were equal and not solidary and equal and solidary. The linguistic features of pronouns and linguistic strategies used by the judges and participants showed their respective characteristics to show strength and solidarity. Judges have more power to use pronouns and have strategies for power and dominance when speaking than the participants, in which they just have to listen and be silent. The power of the judges to have an impact on that is solidarity and non-solidarity with each other.

### 1 INTRODUCTION

Language as a means of communication between community members in the form of sound symbols produced by human speech is also an important tool and element used in interaction (Suandi 2014). Language is classified as verbal, nonverbal, and gestures in its delivery. Language users continuously experience imaginative motion activities that make them withdraw from the interaction process. Sometimes, in the interaction of imaginative movement activities, a person intentionally or unintentionally manipulates his or her language by reducing or changing the elements of the language used to not expressly convey the essence of the purpose of speaking. Language manipulation is the influence that a person gives to another person or group of people through speaking and non-verbal, which means that it is oriented toward achieving specific goals consisting of changing recipients’ behavior, perceptions, and intentions in communicative interactions (Akopova 2013).

Every manipulated language has a specific purpose. It is common to use it in advertisements to suggest something about their products without directly claiming it to be true. (Prelipceanu 2013). Moreover, political leaders use linguistic strategies including linguistic manipulation as an influential instrument of political rhetoric to persuade audiences to a specific political action (David 2014). In daily communication, a person chooses several decisions when he or she speaks, such as the topic, manner, and manner of words and sentences, which are their choices to determine the social relationship between the speaker and the listener in every case (Al Abdely 2016). When engaged in conversation or interaction, speakers consciously or unconsciously indicate their identity, belonging to a particular



culture or social society, and their desire to approach or distance themselves from the intended person (Flannery 2010). The social relationship between the speaker and the interlocutor is usually reflected in their manner and the choice and use of language to better understand pronouns. It has an essential function in associating them with aspects of power and solidarity (Casan-Pitarch 2016). The use of this choice of pronoun shows the existence of strength and solidarity in interaction and has become a theoretical concept in sociolinguistics.

Of course, there is strength and solidarity within the scope of community interaction. Power usually refers to control, authority, independence, and extended involvement, whereas solidarity relates to how people pursue affiliation with others (Tannen 1994). That balanced relationship is governed by solidarity in demonstrating equality (Tannen 1993b). The practice of power and solidarity can occur anywhere where there is social interaction within a community, government, literary work, television program, or many others, such as the state leader and his subordinates, parents, and children, teachers and students, judges and participants. These situations are examples of a relationship where a person uses linguistic strategies that can indicate a difference in power between a higher and a lower level, which creates a dimension of dominance and control. On the other hand, linguistic strategy can also show a dimension of solidarity by being friendly to one another, maintaining a relationship, and showing support for one another.

Various theories and objects have been used to analyze power and solidarity. The first previous study by Susanti and Indarti (2016) examined the power of reflection and solidarity through linguistic relativity strategies in movies. This study aims to observe the face-to-face interaction of women and focuses on how the relativity of linguistic strategies occurs during interactions in the movie. They used an English movie entitled *Divergent* as the object of informant study in understanding the paradoxical relationship between power and solidarity. The writers chose three female characters. The researcher examined the role of women in showing strength and solidarity in society. The results show that among the five linguistic strategies, indirectness emerged as the most frequently used linguistic strategy by women, which has the potential to have relativity in its use.

In the previous study by Yusuf et al. (2019), they analyzed power and solidarity in the pronoun of address [*ke*] used in Indonesian by Acehese speakers. This paper examines the power and solidarity of the second person singular pronoun to [*ke*], which is often used informally by Acehese speakers when speaking Indonesian in four extralinguistic factors: age, gender, relationship with the interlocutor, and social class. The researchers examined 30 undergraduate students at Syiah Kuala University, Banda Aceh. This study used mixed theories such as Brown & Gilman, Hudson, and Tannen & Kakava. The researcher concluded that [*ke*] is considered rude by Acehese elders or older generations.

Another study was by R.J. Firdaus et al. (2022) that examines the theory of power and solidarity through the pronouns used by the speaker, such as to the coaches, participants, and others, to determine their social relationships. They applied the *tu* and *vous* theory by Brown and Gilman, which discusses the formal and informal context, and the power theory intended by Coultas to determine why the speaker can be said to have power. The study results found four of the six categories existed, while the last two did not because the event is informal.

The thing that makes this study different from the previous studies is that this study uses the theory of power and solidarity by Tannen (1993), combined with the theory by Brown and Gilman (1968), to show the differences in the power and solidarity of male and female judges to participants. This study uses the talent show television program Indonesia's Next Top Model Cycle 2 on the NET TV channel as an informant who has not been the object of research in previous studies. A talent show is an event in which participants showcase their talents such as singing, dancing, acrobatics, acting, drumming, martial arts, playing a unicorn instrument, or other activities for a reward, trophy, or prize (Talent Show, n.d.). The conversations during this show television program have also been used as a source of data

research by Aina, Budiman & Asrini (2022) that focused on the language of one of the judges.

This study aims to examine the power and solidarity in the language used between judges and participants in Indonesia's Next Top Model Cycle 2 on the NET TV channel on television. Indonesia's Next Top Model is an Indonesian reality television series based on America's Next Top Model, Tyra Banks, in which a group of young women competes for the title of Indonesia's Next Top Model and the opportunity to launch their modeling careers. Since this research is related to sociolinguistics, it focuses on the conversation between the judges and participants in their interaction. This study is important because it reveals the linguistic features and strategies between female and male judges and their impact on the participants, showing the power and solidarity in talent shows. To facilitate the analysis, this study has created three questions that are outlined to focus on a particular object:

- (1) What are the linguistic features presenting power and solidarity used by the judges for the participants in Indonesia's Next Top Model Cycle 2?
- (2) How is the power and solidarity in the language used between the judges and the participants in Indonesia's Next Top Model Cycle 2?
- (3) What is the impact of language used to present power and solidarity used by the judges on the participants in Indonesia's Next Top Model Cycle 2?

### 1.1 Power and solidarity in the linguistic features

People have the choice to choose and use linguistic features when they want to speak in a language to interact. The choice of linguistic features can indicate their position in power or solidarity. Brown and Gilman pioneered the theory of power and solidarity (Brown & Gilman 1960). They analyze and discuss the linguistic choices that speakers make in a language concerning the polite and familiar forms of second-person pronouns. They also explain that in French, the distinction between *tu/vous* 'you' occurs when second-person pronouns are distinguished due to varying degrees of politeness, social distance, politeness, familiarity, or contempt. They say that in communication, solidarity is conveyed by the common use of the pronouns T or V (the polite pronoun is *vous*, and the familiar pronoun is *tu*). In contrast, power is conveyed by the non-reciprocal use of the pronoun between more and less strong.

Brown and Gilman created six categories to show the relationship between speaker and listener, presented in Figure 1. Brown and Gilman further explain how power and solidarity can contradict each other. Superiority can occur when people with high status interact with those with higher status (husband and wife). Inferiority occurs when people of lower status communicate with those of lower status (co-workers of the same rank). Equality occurs when people with high status communicate with those with low status and vice versa (parents and children, teachers, and students). At the same time, solidarity occurs when the speaker and listener respect and appreciate each other, whatever happens.

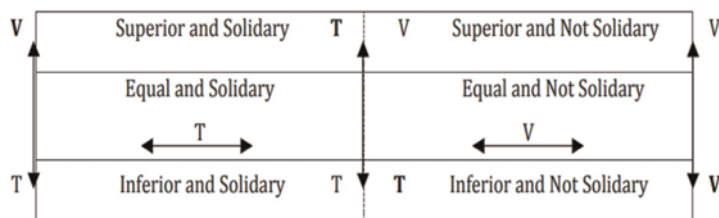


Figure 1. Depicts brown and gilman's theory's six categories.

## 1.2 *Power and solidarity between female and male judges*

The judges also have different genders and various strategies for using language to interact, which can show power and solidarity. The term “strategic linguistic relativity” is used because the specific linguistic strategies employed could have different potential meanings (Coates 2015). Some linguistic strategies, such as interrupting, topic raising, and silence, are commonly claimed to be the linguistic strategies dominating the interaction and are also able to mark solidarity. Besides that, linguistic strategies that mark adversativeness and indirectness may be able to demonstrate the practice of power between the genders. The linguistic strategies suggested by Tannen are as follows:

- **Indirectness**  
Linguists define indirectness as people’s incorrect interpretation of what they do not say. In other words, people do not say what they want to say implicitly, but they draw conclusions based on the implied meaning of their intentions. Indirectness demonstrates power and solidarity through setting, individual status, interpersonal relationships, and linguistic conventions that are ritualized in a cultural context.
- **Interruption**  
Interruption is the occurrence of repeated violations of conversational rules (Coates 2015). An interruption occurs when the second speaker begins speaking while the first is in the middle of a sentence or has not finished speaking (Tannen 1993a). Significant disruption is claimed to be a strategy used by people to dominate the floor during interactions and demonstrate power and solidarity.
- **Silence**  
Silence can indicate a lack of speech, long pauses, or signs of dysfunctional conversation (Coates 2015). Furthermore, interaction silence can convey respect, comfort, support, disagreement, or uncertainty (Al Abdely 2016). Silence can also convey strength or solidarity, depending on the circumstances, who is speaking, and the social context.
- **Topic Raising**  
Topic raising occurs when someone attempts to introduce a new topic or suggests new topics for discussion during a conversation. The speaker who brings up the topic is the one who dominates the conversation the most. However, in introducing or raising a new topic that is not only related to dominance because not all the topics raised were successfully accepted for further discussion by other participants (Coates 2015).
- **Adversativeness: Conflict and Verbal Aggression**  
Gender style and cultural style become important factors in determining whether the use of hostility in interaction is a form of power or solidarity (Coates 2015). Opposition, command, and provocation, as forms of disagreement, are clear indicators of hostility in interactions. When one gender begins to interact hostilely, it can sometimes determine the side of strength or, vice versa, solidarity.

## 2 METHODS

The method in this study is qualitative research (Creswell 2009). Qualitative research is a method for describing, explaining, and interpreting conditions. Qualitative research investigates a phenomenon that occurs at a particular location and time. This research will be explained descriptively to describe events and provide written results in the form of language, with the object of research being the documentation of the use of pronouns in talent shows.

This study analyzes the Indonesian TV show program Indonesia’s Next Top Model Cycle 2 on the Net TV channel. Still, researchers take data from the Indonesian Next Top Model YouTube Channel itself. The reason for choosing this object is that this is a talent competition consisting of four judges (two men and two women) who have more experience in the

world of modeling and fashion, as well as several female participants from various regions and ages who show their talents. From these differences and diversity, there will be an opportunity to see the power and solidarity of the judges and participants precisely in their interactions, following the purpose of this study to analyze power and solidarity.

The data is taken from the transcription available from Indonesia's Next Top Model YouTube Indonesia, which helps the data to be more accurate. The researcher investigates why the jury can be said to have power, solidarity, and impact among the conversation participants from various aspects, such as gender, type of sentence, and use of pronouns. This study focuses on the selection of pronouns and conversational sentences used between the judges and participants in Indonesia's Next Top Model Cycle 2, especially at the assessment event where the jury provides comments and suggestions on photos, video shoots, and even on the runway of the participants.

### 3 RESULTS AND DISCUSSION

This section presents the results of data analysis found from conversations between judges and participants during the assessment session of Indonesia's Next Top Model. The researcher found three datasets showing the use of linguistic features and the language style used. Tannen's (1993) and Brown and Gilman's (1960) theories were analyzed to prove the power and solidarity between judges and participants.

#### 3.1 Data 1 (*Silence and indirectness*)

Ivan: If the meaning of the word **"show your crown"**, maybe you (*kalian*) can see *Luna Maya* in the middle of the jury without a crown on her head.

Luna: **[Just silence]**

Ivan: **But she (*dia*) behaved like she (*dia*) was a woman with a crown on her head.** So, it means show your crown.

Luna: **[Still silence]**

Participants: [Silence]

In Data 1, the juries' conversation when assessing the participant's photo shows superiority and solidarity in the relationship among the judges. When the male jury, Ivan, showed indirectness to the participants, he did not directly state the meaning of the word *"show your crown"*. Ivan named one of the female judges, Luna Maya, whom he called by her full name. Ivan seems to glorify Luna and mentions using the word *"she"* even though Luna just stays silent without responding, which means Luna's attitude and style reflect the meaning of the word *"show your crown"*.

On the other hand, if the conversation is seen with participants who are just silent on the judge's assessment, it shows equality and not solidarity in the relationship between the judges and participants. One of the juries, Ivan, calls all the participants with the pronoun *"kalian"*, which means what he says is for all the participants to understand. Ivan uses indirectness when speaking to make listeners understand, showing he has the ability to be the one who understands Jury. Then, jury member Luna, with her style and attitude, had the power even in silence, so Ivan made her a woman through indirection, which he meant to the participants. Then Luna showed she had power with her silent style and attitude. Ivan made Luna a woman who was assumed to be a queen, or *"show your crown,"* which Ivan meant to the participants.

#### 3.2 Data 2 (*Interruption & adversativeness: Conflict and verbal aggression*)

Luna: I (*aku*) prefer your (*kamu*) photo group, you (*kamu*) are stronger, you (*kamu*) are like this... **(INTERRUPTED)**

Ivan: or feet like this is fine, but hands are in front.

Participant (Sarah): There is *kak*, I (*aku*) photo like that.

Panca: There's a photo of you (*kamu*) in a pose like that, that's just how many times...

**(INTERRUPTED)**

Gani: In that pose, there is *kak*, because I'm (*aku*) the one directing it, I (*aku*) already told you (*kamu*) that the pose is like this, so the legs are like this one... **(INTERRUPTED)**

Panca: But the face is not good. I (*aku*) really remember halfway back when I (*aku*) gave you (*kamu*) a clue, right? like you want to pounce, wild like this and then you realize that you want to pose like that.

Participant (Sarah): I (*aku*) think when I took the photo, I (*aku*) took it out but maybe it wasn't fast enough because... **(INTERRUPTED)**

Panca: No! From the first to the last your (*kamu*) expression is more or less like this, just like this.

Luna: But actually, I (*aku*) like it, I (*aku*) like the expression it's expensive like... **(INTERRUPTED)**

Ivan: But the expression is already there from the previous episode, nothing new.

Luna: Alright, Thank you Sarah.

In Data 2, interruptions were found between the judges and participants. Conflicts and disagreements between each judge caused the interruption. This shows two things, as with Data 1, but what makes the difference this time for the relationship among the judges is that they are superior and not solidarity. When all four judges of Indonesia's Next Top Model interacted, each expressed their opinion, but each constantly interrupted the conversation (Tannen & Kakava 1992). Luna, who commented on the photo, was interrupted by Ivan. When commenting, the male judge, Panca, was also interrupted by the female judge, Gani. Even though she used the pronoun words "*kak*," she expressed her disapproval and indicated that she was the one who contributed at that time. However, Jury Panca interrupted back and said that the suggestion from Jury Gani was not good. Jury Luna also again argued that the photo was good, but it was torn and was not approved by Jury Ivan. They have master's degrees as judges. Each of them uses the pronoun "*aku*," which is an informal pronoun for itself but is indicated to show power. They use each other's power for their own opinions and do not want to lose to each other, so they interrupt each other.

On the other hand, the conversation from Data 2 shows equality and not solidarity between the jury and the participants. Sarah was one of the participants whose photos received comments from the judges. She tried to answer what the jury said. Sarah used the pronoun "*aku*," and the word "*aku*" has been described as an informal pronoun (Yusuf et al. 2019). However, when Sarah calls the judges, she uses the pronoun "*kak*," which still retains courtesy and respect for the judges. Not only was it that when Sarah tried to say what she wanted to say, she was immediately interrupted by Jury Panca, but it also meant that there were class differences so that she, as a participant, could only be silent and try to listen to what the judges had to say.

### 3.3 Data 3 (Topic raising)

Luna: **Faradina, the runaway was great.**

Faradina: Thankyou

Luna: At the time you (*kamu*) flow the dress. (*Judges Give applause*)

Ivan: The ending is cool, isn't it, you (*kamu*) miss the show?

Faradina: Yes, *kak*

Luna: Yes, it's flight time, I (*saya*) want to know you've been in modeling for a long time, right?

Faradina: From 2010

Luna: **It's been 11 years, family support?**

Faradina: Yes *kak*, mmmm less. less support

Luna: Why?

Faradina: Because they (*mereka*) want me (*saya*) to work like an office job, work for sure.

Luna: Modelling uncertain huh?

Faradina: Is there an age, isn't it *kak*, because modeling is like that

Luna: Faradina, if you (*kamu*) have a chance to be a winner at Indonesia's Next Top Model, what do you (*kamu*) think the family that was against you would say to you (*kamu*)?

Faradina: Maybe...(cry)

Luna: Why... who is the most against?

Faradina: *Papa*

Luna: **What do you (*kamu*) want to say to *papa*?**

Faradina: (*while crying*) For *papa*, I want to apologize that it can't be what you want, but I'm (*saya*) doing this for the happiness of *papa* and the family.

Panca: Faradina if you see today is the same as last week, this is your (*kamu*) effort starting to show. You (*kamu*) put more effort than before, you (*kamu*) can come out now with something that shows us that, I (*gue*) can do it, I'm (*gue*) stunning, it's like answering your (*kamu*) struggles in the modelling world and your business and your family's. **You (*kamu*) shouldn't feel weak, feel like you're being oppressed because your father didn't approve of you being a model.** So, you (*kamu*) use this moment to show people that you (*kamu*) are strong, and you (*kamu*) can get there too, okay Faradina.

Faradina: Yes, thankyou *Kak*

Luna: We'll see your (*kamu*) photo. The sadness in your eyes in this photo, maybe this is the spirit that you (*kamu*) brought here to prove to your father that **you (*kamu*) are a proud child.**

From Data 3, the conversation shows equality and solidarity in the relationship between the judges and participants. Here, the jury shows the power that can raise the topic. Jury Luna began to comment and praise the runaway Faradina, one of the participants. Jury Ivan showed affection by using the pronoun "*kamu*" for Faradina and asking if she was missing a fashion show. The jury member, Luna, continued to ask about Faradina's experience and immediately asked her family whether she supported her career as a model. The change in the topic of conversation, which should be about runaway assessment and then turning to Faradina's background and family, shows that Jury Luna has the power to control what is discussed.

Not only that, but the changes also showed that the Panca Jury showed strong solidarity with Faradina, despite being a jury member. He used the pronoun "*kamu*", which also showed familiarity. In the end, Juri Luna returned to the review topic, commenting on Faradina's photo but still relating Faradina's sadness as support. The equal side can also be seen in Faradina, who uses her pronoun with the word "*saya*". The pronoun "*saya*" is used in a formal context to speak with judges (Yusuf et al. 2019). Even when answering the jury's questions, she used the pronoun "*kak*", which was addressed to the jury, so that the jury's power to change the topic of conversation also has a solidarity side from support, the positive motivation given is very clear that there is power and solidarity between the judges and participants.

#### 4 CONCLUSION

From the analysis, it is found that there is power and solidarity in the use of language between the judges and participants and among the judges of Indonesia's Next Top Model Cycle 2. After being analyzed using Brown & Gilman's (1960) theory of linguistic features in

pronouns and Tannen's (1993) theory of linguistic strategy, the use of the pronoun "aku" by the jury indicated that these things are informal but still has power and control. Meanwhile, participants used the formal pronoun "saya" for themselves, and the pronoun "kak" was addressed to the jury to show more respect. In the interaction of the judges and participants, a linguistic strategy was found to impact them. The result found that judges and participants had superior and solidary, superior and not solidary, equal and not solidary, and equal and solidary.

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## People's perception toward the use of English in a multilingual community

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**ABSTRACT:** Bilingualism is not a rare phenomenon that occurs in this world. Countless people globally understand and speak more than two languages daily. Moreover, of the numerous languages that coexist in this world, the English language usage by a bilingual is also not insinuated to be a rare phenomenon as English is an international language. Thus, this paper intends to study ordinary people's perspectives on the English language in a specific region of Indonesia named Sidoarjo city, where its citizens are also aware of the bilingualism phenomenon. The researcher has successfully achieved 52 respondents, including the interviewees, by employing an online questionnaire around Sidoarjo city. The researcher sets the purpose of this study to examine people's perceptions, the reasons people have varied perceptions of a particular language, and why some citizens apply the English language as a daily language. A qualitative approach is implemented in this paper. In addition, the data was collected through questionnaires and interviews with some respondents who lived in Sidoarjo. The data was compiled by examining their similitude in answering the questions by utilizing their cognition of the bilingualism phenomenon. The study's findings show that some people did not believe English is considered a superior language used in this region. They suspect that foreign languages are evolving quickly; thereupon, English users are not rare or implied to have specific intelligence. Thus, the study closure stated that more than half of the respondents typically think of the English language.

### 1 INTRODUCTION

According to David Crystal (2003), a language must attain recognition in every country in two methods to develop a global status. The tribute could be achieved if the language is an official language or if the country makes the language the priority in learning the second language. In short, the language must dominate and be widespread throughout the world. In addition, the language that is accommodated with the description is the English language. The world data stated that 39 countries have English as their mother tongue, with 375 million people using it daily and more than 750 million people acknowledging it as a second language (Rao 2019). From this data, one must be aware of the significant English language development that caused this language to be considered a global language. English is the most used language globally and is regarded as an international language since it has profoundly infiltrated all international domains, such as business, entertainment, education, and political life (Crystal 2003).

Numerous states use English as their second (ESL) or third language in the data due to the enormous recognition of the English language. Subsequently, this phenomenon has created



the term Bilingualism, an individual who uses two languages or more in countries where they speak their native language and another as a secondary language (Wei 2001). Although the massive usage of the English language then created a mixture of the English language in most countries, it will not remove the essential meaning of its language. Moreover, the ample usage of English also created countless eyes of different human beings' perspectives, which may divert various stereotypes of people. Perception is defined as how individuals collect and interpret the information around them based on their environment (Amodu 2006).

Concerning the people's perspective on the English language, some studies have implemented research on English language perception in specific environments and situations for particular subjects. Prayoga & Khatimah (2019) have researched the paradigm of English language usage in urban society in Indonesia, Jabodetabek (Jakarta, Bogor, Depok, and Bekasi) city. Their article raises an issue of the mindset of urban localities that think foreign language is higher than local language. While utilizing a descriptive qualitative methodology and collecting the data through the in-depth interview with 35 people, the researchers have found a Jabodetabek citizens' perception of the English language has brought them into a somewhat a behavior that impacts the weakening of Indonesian language prestige. Numerous citizens are using the English language to symbolize an individual's higher status.

Another researcher has also studied people's perceptions of the English language with the subjectivity of Korean English and non-English students and the factors that influenced their perception. In their study, Ju Seong Lee & Kilryoung Lee (2018) found diverse responses due to the different circumstances. The research has uncovered a data analysis in some respondents and explained it through a quantitative methodology. The study discovered a more positive mindset in English students toward using the English language as an international language. In contrast, the non-English student's responses are somewhat more pessimistic. In short, familiarizing a formal language classroom has been one of the significant influences on students' English perceptions.

Moreover, an exciting study also comes from an article by Murtisari et al. (2017). The researchers have been inclined to research several studies on the English Language perception in Indonesian high schoolers. It aims to search for English's impact on the language and culture. Moreover, The researchers conducted the study quantitatively and collected the data through a questionnaire on 333 students. In addition, the data shows that some students positively stated that the English language benefits the Indonesian language for better communication purposes.

Correlated with the above-mentioned three studies, the researcher has found a gap in studying people's perceptions. Ju Seong Lee & Kilryoung Lee (2018) and Prayoga & Khatimah (2019) have used a prominent environment with considerable English users in their research. Thus, the researcher has decided to conduct research in a more specific region in Indonesia named Sidoarjo city, a city placed on the border of the second biggest city in Indonesia.

Unlike many neighboring countries, Indonesia has set English as a foreign language rather than a second language (Gunantar 2016). It is claimed that the English language is employed for occasional purposes only, and it is hard to find people who use English one hundred percent daily. However, the influence of the English language in Indonesia is enormous. The demand to speak English in the city is high due to the deliberate use of excessive English content in some media (Sneddon 2003). Approximately 22% of 200 signs implicated in Sidoarjo areas had been deemed to use more English content (Fakhroh & Rohmah 2018). Hence, the lack of opportunity for English learners in the past created a common stereotype that 'the one who speaks English is an educated person with high status' (Sneddon 2003) that exists until the present. Nonetheless, this statement profusely made the researcher want to examine bilinguals who lived in Sidoarjo since the usage of English is prominent.

The Sidoarjo region is located in East Java, with four primary languages used daily by the citizens: Javanese, Madurese, Sundanese, and Indonesian-Jakarta dialects (Setiawan 2013). Thus, this phenomenon has implicated the researcher in investigating English language

usage in Sidoarjo's bilingual community. This study aims to dissect the English language position additionally than any other local language. Through several respondents' perceptions, the researcher is inclined to search for the factors of a common phenomenon in a society where people who speak English daily are called superior. This research is meant to search precisely the reason why there are such labels that transpire in a bilingual community. Nevertheless, in line with the background study, the researcher has constructed some research questions, such as

1. What is the people's perception of bilinguals who use English?
2. Why do people have that perception?
3. Why do bilinguals use English instead of other languages?

## 2 LITERATURE REVIEW

### 2.1 *Bilingual and Bilingualism*

The definitions of Bilingualism vary from person to person. In sociolinguistics, Bilingualism is an individual possessing at least two or more languages with particular purposes (Wei 2001). A bilingual or a person who speaks those languages must have the ability to produce complete sentences and utterances in languages other than their first acquired language (Beardsmore 1986). Bilinguals may be able to apprehend and use two or more languages alternately or simultaneously. However, individual competence in both languages is different. They may possess a disparate proficiency in the language they use daily and the languages they use for some purposes only.

Bilingualism is distinguished into two types that are individual and societal Bilingualism. Individual Bilingualism relies on each person with the ability to apprehend two languages. Bilinguals may have various factors to achieve the ability to function in languages, and they have their reason for speaking different languages in different situations. For instance, consideration factors such as conversation subjects, social use, or location settings propel them to use those languages (Wei 2001). Moreover, numerous bilinguals ensued their ability in a society where two or more languages exist is called societal Bilingualism (Deluca et al. 2019). The exemplification of the link between societal and individual can be found in the immigrants and mediator cases. The mediator acts as an individual bilingual who helps different groups communicate using their language ability in a particular society (Beardsmore 1986).

### 2.2 *Language attitudes*

Attitude functions as a simple structure for a human to manage with a complex structure (Mackenzie 2010). There are eight specific attitudes: (1) language variation and dialect, (2) a new language, (3) minority language, (4) language community, (5) language lessons, (6) parents toward language lessons, (7) specific language usage, and (8) language preference (Mackenzie 2010). In sociolinguistics, there are terms called language attitude, which relate to individual prejudices toward a particular language. Language attitude denotes the person's views regarding the speaker, context, and function that the language engages. Individual attitudes toward the language are primarily influenced by the country's political and social, significantly influencing educational stages (Holmes 2013). Nevertheless, it is feasible within a social community to have a stereotype related to prestige, status, and social likeability among the language speaker due to the variation of styles (Coupland 2007). These attitudes may construct people's minds diverse from one language to another. Moreover, this attitude does not always come from negative mindsets but also positive ones. The exemplification of negative attitudes is, in Javanese language cases, considered an old-fashioned and

uncool language (Setiawan 2013). Meanwhile, positive attitudes could be encountered in a community that helps to support minority language use (Holmes 2013).

### 2.3 *Language choice*

The joint struggle in the bilingual or multilingual community mainly lies in individuals' inner choice of language. This situation may occur when two or more languages exist and are used in bilingual or multilingual settings. Language choice is when an individual decides to speak what language in particular multilingual settings are widely characterized (Wei 2001). Moreover, many factors transpire to the speaker having a language choice. For instance, a social context, the topic of discussion, and the person they talk to (Holmes 2013).

Moreover, numerous multilingual people must be aware of every language's situational style when considering using a language. For instance, they have intimacy, informality, solidarity, and equality language indicators. The speaker speaks one language in a formal situation, and other languages are spoken to indicate an intimate situation. In addition, how one language handles better topics in one language than the other also influences an individual's language choice.

## 3 METHOD

This research is conducted with a particular region in Indonesia as the place of research. Sidoarjo, as a place of research, is chosen due to the expansion of English language users. The data in this paper are gathered through a questionnaire and interview with the study participants who certainly lived in Sidoarjo city and could understand two languages or more. A questionnaire consists of one part with nine required questions and two optional questions. A total of 11 lists of questions are related to the research questions. In addition, the deployment of a questionnaire through the online form successfully achieved 50 respondents with mixed responses. The researcher did not set a time and word length requirement for the respondent to answer the questionnaire. Moreover, the researcher also conducted a semi-structured interview with two people who claimed to be Indonesian-English bilinguals. The short interview that was collected was over 3–4-minute audio talks.

This paper has utilized a descriptive qualitative research method to construct the paper. The data gained from several respondents' responses to the open-ended questionnaire and the recorded interview will be transcribed and used as the answer for this analysis. To make the respondents understand the questions quickly, the researcher has decided to give questions for the questionnaire and interview in Indonesian. In addition, the data is analyzed by categorizing the outcome based on the similitude of the respondent's responses before concluding the result.

## 4 RESULTS AND DISCUSSION

This section mentioned several data lists taken and categorized from the respondent's answers to the 11 questions in the Google Form questionnaire.

This section is meant to do further elucidation of the data. A total of 52 respondents are collected through the deployment of a questionnaire. Those respondents are legitimate individuals in Sidoarjo city with the age range of 16–42. Table 1 portrays the most frequent language they apply every day, notwithstanding their proficiency in those languages. Considerable individuals are identified as Indonesian-English bilingual, whereas others are recognized as Indonesian-Other foreign and local languages bilingual. Hence, the data shows that nearly half of the respondents could speak and use English, directing the English language's awareness in the city.

Table 1. Bilinguals and their languages.

Respondent's language ability		Total
Indonesia-English	Indonesian-English	3
	Indonesian-English-Javanese	15
	Indonesian-English-Javanese-Sundanese	2
	Indonesian-English-Javanese-Japanese	3
	Indonesian-English-Korean	2
	Indonesian-English-German	1
Indonesia-other languages	Indonesian-Javanese	25
	Indonesian-Javanese-Sundanese	1
<b>Total</b>		<b>52</b>

Table 2. Bilinguals' perception and their reason.

Respondent's answer	Respondent's reason "because English bilingual is . . ."	Total	%
The English language is not superior	Not necessary smart	6	53.8%
	Normal/ordinary	6	
	It is logical to learn an international language.	8	
	No further comment	6	
	Exaggerating	2	
The English language is superior	Altering people's appearance (more educated and confidence)	16	46.2%
	No further comment	8	
<b>Total</b>		<b>52</b>	<b>100%</b>

Table 3. Bilinguals English language usage.

The general answer to English language usage		Total
Respondents who use it occasionally	Content purposes	9
	To communicate with friends and to enhance confidence	4
	Work purposes	1
Respondents who use it daily	Academic purposes	6
	Content purposes	1
Respondents who use it infrequently	Work purposes	2
	Insufficient knowledge	22
	Not needed	3
	Lack of confidence	2
	Lack of friends to talk to	3
<b>Total</b>		<b>52</b>

#### 4.1 *People's perception of bilinguals who use English*

According to Sneddon (2003), the English language is supposed and assumed to be a high-ranking language with predominantly well-educated users. Globally, American English is recognized as the dominant language or a language that emerges with a higher political and social status than others (Accurso 2015). In addition, the first research question about the people's perception of bilinguals who use English is categorized into two options. One is the

respondent who agrees that English language users are ranked higher than others, and the other opposes positioning English users higher. In the previous study on Indonesian perception of the English language conducted by Prayoga et al. (2019), they found that the English language is superior to the Indonesian language. The researcher concluded that the English language rank and social class are higher.

The most exciting finding from a recent study was that (53.8%) out of 52 Sidoarjo respondents proclaimed that English users are not superior or do not have higher qualities than daily users of other languages, contrasted with the theory. Both interviewees also affirm that there is nothing wrong with using English daily. Notably, suppose it is used as a functional language, for instance, where an individual operates the English language in a critical meeting presentation. In that case, one can use English for work purposes, not merely for a lifestyle where people constantly integrate one language with others. In short, respondents presume that English users are only sometimes ranked higher than other language users.

#### 4.2 *Bilinguals who think English users are superior*

In corresponding with the previous research question, the second research question aims to comprehend the respondent's reasons for their perception. The respondents' answers are divided into two types: those who agree and those who disagree. According to the questionnaire result, most respondents admit that English bilingual users are not superior. The current study found four categories alongside their reasoning with their perception. First, six respondents claimed that bilingual English users are only sometimes competent. It implicated the meaning that English knowledge is not a measurement of intelligence. In short, an individual's intellectual capability is not limited to learning English. Subsequently, there is no difference between English and other language proficiency. Second, there are also six respondents asserting they have no additional comment. They do not think English Bilinguals users are higher or lower in qualification. Third, eight respondents profess that English is an actual prominent language and that it is logical that numerous individuals utilize it daily. One quote represents that,

*“ ... di Jaman sekarang (generasi millennial) orang yang bisa berbahasa inggris seperti hal yang wajar.” “ ... In this generation, it is natural for people to use the English language”*

Fourth, six respondents declared that English bilingual users are only superior with further elucidation. Lastly, from the interview's results, both respondents assert that English bilingual users exaggerate due to misusing language out of context and in certain situations. The mixing language of Indonesian-English is perceived as something unwarranted. In correlating with the research, it is supported by the study that emerged among Yogyakarta students; most students regard that mastering any local language does not necessarily decrease their prestige, unlike the standard perception of the English language in Indonesia. The study also stated that learning English should benefit international communication (Fitriati & Wardani 2020).

Surprisingly, the second type of respondent who agrees with English bilingual users is only divided into two categories. First, 16 out of 24 individuals agree because they consider bilingual English users ingenious. Several of them presume that the usage of English is escalating people's appearance; they appear to be more confident and looks-wise whenever they speak English fluently. Some also exemplify that the English language is challenging, so people who constantly utilize it in a country that does not enclose it as an official language is considered an intelligent person with high quality. Moreover, some respondents claim that English proficiency is advantageous in the job field. Lastly, eight respondents displayed English bilingual users as superior without clarifying further rationales.

The result of this discussion diverges from the previous work conducted by Prayoga et al. (2019), which concluded that mastering the English language in Jabodetabek city is more

developed than the present study. In addition, they stated that people's perception of English is good due to the prominence of the English language bringing people to a higher position of job and socioeconomic level, better than only mastering the language of Indonesia. In short, the most comprehensive data consisting of respondents' response and answer toward the reason for their opinion show that most respondents who said yes reasoned that English users bilinguals are seen as more intelligent and highly qualified. Comparingly, those who say no claim that there is nothing wrong and differences between English and other language users.

#### 4.3 *Why English?*

The third question in this study sought to determine why some bilinguals insisted on applying the English language more than any other language they could. As mentioned in the literature review, it is feasible for individuals to choose a language based on particular groups and situations (Wei 2001).

Nevertheless, the study's findings displayed that those nine respondents frequently used the English language other than another language. In converting the answer from the questionnaire, the researcher discovered that the responses were primarily the same. They prefer English over other languages due to their needs and situations. They disclosed they were obligated to use English in academics (university and school) and work fields. In summary, the individual's daily usage of English is selected because they have to. It is a requirement they have to regard. Based on interview X, the interviewee proclaimed that they prefer English over others because it is part of an international language that enables them to intercommunicate with other individuals with different languages.

“... kebanyakan nasabah saya kebanyakan mereka tidak bisa berbahasa Indonesia dan sementara saya juga pasif berbahasa korea. Jadi, jalan jembatan satu-satunya adalah Bahasa Inggris...” “...most of my customers mostly do not speak Indonesian and while I also passively speak Korean. So, the only bridge is English.”

Moreover, based on the respondent's answers who used it occasionally, they admit that they frequently need the English language for social media intentions and others are to intercommunicate with friends and family efficiently. At the same time, few admit there is a spark of satisfaction while using English. Thus, this paper's result concludes that the English language function is an additional foreign language, similar to the study by Lauder (2010). This finding also reflects the previous study (Murtisari & Mali 2017) that finds the English language is functional as a bridge to unite communication of specific people while using it as a learning media and Smokotin et al. (2013), which also found that global English language development invariably leads to the educational system.

## 5 CONCLUSION

This paper investigated the classical theory of English users that are assumed as individuals with a higher identification. Thus, the paper intends to examine the Sidoarjo residents' perception of English bilinguals. The researcher gathered 50 pieces of data by employing several questions in the form of a questionnaire and interviewed two people for further research. Moreover, the research has shown a result such as (1) More than half of the respondents (28 respondents) refute the “English users are higher in social class” statements. The significant findings claimed that English bilingual users are only sometimes indicated as people with high rank. (2) There are four reasons for those citizens' perceptions; normal perception, not intelligent measurement, and natural-born. Most of their perception is based on the current occurrence and development of the English language. So, individuals deemed there was nothing distinguishable between English users and other language users. (3)

Bilingual users prefer English to other local languages in Sidoarjo because of specific requirements. They apply the English language daily for academic and work purposes because English is an international language that associates with other languages entirely. These findings suggest that, in general, the English language is the same as the other languages. This new understanding should help improve predictions of people's common perception of English users.

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## The language norms used by a Korean-Indonesian mixed-married family living in Korea

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**ABSTRACT:** This study aimed to describe the language pattern and norm in a Korean–Indonesian mixed-married family and the effects on their children living in Korea. The subject of this study was a family YouTuber, the Kimbab Family. The investigation focused on the family’s norms that affect how the pattern of language in this family and the effects on the children in mixed-married families with parents who have different native languages. This study was phenomenological research by a qualitative study based on observation. The observation was conducted by watching the Kimbab Family YouTube channel. The results found that some language norms applied in the Kimbab family. Moreover, the language norms affect the language pattern of the children who used Indonesian for talking with their mother’s family and Korean for their father’s family. There were also several effects of being children in a mixed married family, such as lack of vocabulary, early mixing, and language selection to communicate.

### 1 INTRODUCTION

Nowadays, mixed married is not a strange thing. Many youths are interested in marrying someone who has a different nationality from them. A mixed married is when two people from different races, religions, citizenship, culture, and ethnicity fall in love and get married. Looking at the differences between two different backgrounds, there must be many challenges but no obstacles for them to get married. When two people from different backgrounds decide to marry, they merge principles and practices, conventions, nationalism, and even language communication. The pair could receive broader information from the indigenous residents, shatter preconceptions, and learn a new skill via intermarriage. Building connections with individuals who are diverse from them is unique because it creates a fresh and unique; spouses from various backgrounds may also communicate their wishes to each other (Sirait & Salam 2020).

In a mixed marriage, one or both sides need to speak at least two languages, known as Bilingualism or Multilingualism (Harding et al. 2003). The couple also needs to encourage their children to converse the different languages (Mueller et al. 2020). Usually, bilingual children have already retained their ability to communicate in two languages since their parents were exposed to two languages at homeroom at a young age (Zein & Damanhuri 2019).

Each mixed-married family has language norms that apply to their family, especially their children. Every parent has their way of parenting (Sadiyah 2018) and language norms are also part of parenting. According to the Oxford dictionary, a norm is a situation or a pattern



of behavior that is usual or expected. In other words, we usually call the norm a rule. Then, if we can draw a line, the language norm in the family is how language is used in the family's pattern or rules, and each family has its patterns or rules. There are two common ways how parents influence their children with their language. The first one influences one language, followed by another (Harding et al. 2003). Second, they have influenced two languages in a row since birth. How children are bilingual depends on the language used by their society and how parents influence and maintain their language use with their children (Suryanthi 2013).

Moreover, the language development of school-age children is commonly slow (Nippold 1995). Parents cannot see the difference in a short time. However, when the children are already grown up, parents can see that the language norms develop children's language ability in both parents' languages. The development includes the ability to argue, persuade, and negotiate (Nippold 1995).

The process of communication that occurs in families with different nationalities is not only about expressing opinions among family members but also includes how the communication patterns are related to the child's upbringing (Kartikasari 2017). The existence of family members who do not have the same perspective and culture in the parenting pattern will indirectly be different from families with a single cultural background (Lam 2011). Therefore, intensive communication is needed to find the correct parenting pattern. Parental communication is essential to know the development and better growth of the child in everyday life. The communication patterns that are built will form parenting habits. Communication in the family is early education for the child's provision of life in the community (Sirait & Salam 2020).

Some research about mixed-married families is already published. One of them is Addisu (2016). In the study, the author talked about mixed-married families, multilingualism, and identity in language use in an interracial family who lives in Addis Ababa. The author aimed to analyze multilingualism and identity from the micro and macro levels (Addisu 2016). However, the paper is only limited to Ethiopia's society. The gap between my and Addisu's research is the different scopes, limitations, and objects. Next from Nurjaleka & Supriatnaningsih (2021) research. They provided the phenomena of code-mixing, code-switching, and borrowing in an interracial family. They used Indonesian children as the object in the study of Nurjaleka & Supriatnaningsih (2021). This research just focused on code-mixing, code-switching, and borrowing, which is the effect of being bilingual. The issue can be the research gap between my paper and this paper besides the object and the culture (Nurjaleka & Supriatnaningsih 2021). The research will explain more comprehensively the effects of bilingualism not only mentioned in this research.

Therefore, this study aims to show how children from mixed-married families communicate, interact, and learn from their parents from two different backgrounds. Then, it will discuss the language pattern in this family and the language norms applied in the family if the parents have other native languages. Next, we also discuss the effects on children having parents with different backgrounds. The object of this research is Kimbab Family. A Korean-Indonesian mixed married family who lives in Korea. Mama Gina is an Indonesian woman, Appa Jay, a Korean, and their children, Yeon Su Ji, Yeon Yun Ji, and Yeon Ji O.

## 2 METHODS

The qualitative research method was chosen to understand and describe the phenomena happening in the research (Deni & Mutiara 2021) regarding the kind of patterns occurring against linguistic norms in parents and children in the Kimbab Family in watching videos on the Kimbab Family YouTube channel. The qualitative method is used to scientifically concoct various information built, developed, and conveyed by humans or specific communities, which are objects and subjects in social research (Cropley 2019). The method

matches this study since the object observed is the language used by three children of the Kimbab Family: Su Ji, Yun Ji, and Jio, and their parents, who have two different nationalities. The types of research used in the study are phenomenological research by the qualitative method. This study aims to describe the nature of the events taking place at the time of the study that will produce descriptive in the form of written or spoken words from the informant or the observed behavior. This study analyzed and systematically recorded behavior by looking at or observing individuals or groups directly. The observations used in this study are participant observations. To get the data, the researcher provided several questions related to the research question. Then, the researcher answered all the questions by observing the videos. After answering all the questions, the author grouped and elaborated the answers based on the field kinds.

### 3 RESULTS AND DISCUSSION

Gina Selvina and Yeon Seung Jay are behind the Kimbab Family YouTube channel. They are commonly called Mama Gina and Appa Jay by ‘Keluarga Online’, a nickname for Kimbab Family fans. Mama Gina and Appa Jay have had three children from that marriage. They are Su Ji, Yun Ji, and Jio. Although they have different countries, languages, and cultures, they raised their children in two languages. Mama Gina still calls her children in Indonesian, especially Sundanese, such as Neng Su Ji, Dede Yun Ji, and Dede Jio. On the Kimbab Family YouTube channel, they shared various family activities, the excitement of their children, and how the couple introduced their respective cultures.

Based on the observation, the family allows the children to choose their language to communicate. Considering that they live in Korea today, the children, Su Ji, Yun Ji, and Jio, certainly chose Korean as the language of instruction in their daily activities. However, they also used Indonesian to talk with the mom, who is an Indonesian. The mom tried to teach her children to speak and understand Indonesian. The phenomenon can be found in all their videos.

To maximize Indonesian language learning, which is still far from their child’s Korean, Mama Gina applied several norms that their child must adhere to. In the ‘*Bicara Hanya Bahasa Indonesia Sehari!! Tantangan Untuk Suami Korea!! 하루동안 인도네시아펠로만 말하기 챌린지!!*’ video, Mama Gina, made a challenge to the children and Appa Jay to use Indonesian for 24 hours. They are prohibited from using any language other than Indonesian. For their child, there was no penalty for violating it. However, they will be reprimanded if they might have accidentally spoken another language. For Appa Jay, if he broke the rules, he needed to bite the cayenne pepper, or in Indonesia, we call it *cabai rawit* as punishment. Their children had several reactions to the norms applied in the video.

The children looked enthusiastic while watching the video. They went to a park on foot and chatted with Indonesian several times. Su Ji, the oldest child, was brave enough and confident to speak Indonesian. Su Ji is also able to compose sentences well and correctly. She was a few times confused about speaking Korean but immediately rectified it after realizing it. Considering that Su Ji is the oldest child and has entered the 3rd grade of elementary school, Su Ji’s confidence in speaking is also perfect. Su Ji once went to school in Indonesia when she was in kindergarten. It was also believed to make Su Ji’s Indonesian ability the best of the three.

The second child, Yun Ji, looked quieter than usual. Yun Ji is a child who talks a lot, so we can see the difference between her regular habit and this challenge video. Yun Ji’s ability cannot be said to be wrong, nor can it be said to be good. At the beginning of the video, she refused to speak for fear of being wrong; however, after getting directions from Mama Gina, it doesn’t matter if you say the word with the incorrect pronunciation because of the learning process. In second language learners, parents are essential for their development (Setiawan 2009; Wallner 2016). Afterward, Yun Ji began to dare to speak a little Indonesian. Yun Ji’s current age, which is 6 years old, is when she starts to think like a child who already understands the fear of being wrong. Yun Ji began to think about the consequences she

would receive if he made a mistake. Besides, she is less fluent than Su Ji in Indonesian. Then, this can also be one of the factors why Yun Ji refuses to speak at the beginning of the video.

The youngest is Jio, who was 4 years when the video was taken. While in the active period of an active toddler, Jio looked confident as he spoke Indonesian. He did not seem afraid of being wrong in pronunciation or grammar. Jio also looked bold in saying a word out loud. At his age, he still did not fear being wrong. He just did what he wanted to do. However, this is one of the sound beginnings for Jio because if he still dares to speak loudly and is not afraid of being wrong, his Indonesian language efficiency will develop rapidly.

Also, in the video, Mama Gina explained that their children and Appa Jay communicated in Indonesian during a phone call with Mama Gina's family, who are in Indonesia. Considering that Indonesian families do not speak Korean, their children must also be able to speak Indonesian to communicate with families in Indonesia. Meanwhile, if their children communicate with the family from Appa Jay's family, they use Korean, considering that Appa Jay himself is Korean and his family also speaks Korean.

In another video, namely '*Latihan Bahasa Indonesia! Beli Bakso Sendiri! 3남매 인도네시아 아펠 다진 연습!*' in the video, Mama Gina gave a challenge to her three children to buy meatballs at one of the Indonesian restaurants whose owners and employees are also Indonesians, namely 'Bakso Rindu Kampung' in the Itaewon area. Mama Gina challenged the three to buy meatballs according to the notes given by Mama Gina using Indonesian. Mama Gina and Appa Jay waited outside the store when the children bought meatballs. Yun Ji's conversation can be seen below.

“언니가 말하곤다” (sister, you will say it all ya!)

“언니가 말해” (sister, you are who will talk). She said this twice.

Su Ji talked to the store employee when the orders were served, while his two younger siblings stayed quietly beside her.

While waiting for the meatball order, a visitor turned out to be an Indonesian and asked them in Indonesian.

Stranger: “*bisa Bahasa Indonesia?*” (Can you speak Indonesian?)

Su Ji and Jio: “*bisa*” (yes, I can)

Stranger: “*kelas berapa?*” (What grade are you in now?)

Su Ji: “*kelas dua*” (I'm in my 2nd grade)

In the conversation, Yun Ji seemed uninterested in joining the answer. She just kept silent and then afterward started talking to the camera herself.

From the example above, it can be seen that Su Ji was already brave enough to speak Indonesian with strangers. Jio also did not hesitate to answer questions from strangers. As for Yun Ji, she did not have enough courage to talk in Indonesian with strangers other than her mama. She did not even want to answer the simple questions that strangers asked her that she could answer.

The above proves that there are several effects of multilingual and multicultural families. Some bilinguals have lower scores on vocabulary than monolinguals (Blom et al. 2020). Kimbab Family's children proved that their Indonesian vocabularies are not that much if compared with their first language, Korean. However, it is a normal phase since the children are still in language development. Parents play a significant role in children's vocabulary development (Blom et al. 2020). Mama Gina's norms, which are applied in several videos, show parents' contribution to developing their children's vocabularies.

Another effect of the Kimbab Family was the early mixing of their children. Early mixing is caused by more than one language stimulation in the primary period of language development (Rahayu 2018; Setiawan 2001). In '*Apa Yang Anak 4 Tahun Cari Saat Bangun Tidur?? 막내 아들이 생각하는 아빠와 댁은 점?*' video, there were several examples of early mixing done by Jio in his four years old:

“kalo sama Yun Ji noona, aku *anjohahe*” (if I'm with Yun Ji noona, I don't like it)

“Dede bisa Bahasa Indonesia tapi *saljjak*” (Dede can speak Indonesian but just a little bit)

In that example, we could see that Jio mixed his language from a young age. However, it does not show a bad sign. Early mixing does not mean that the kid lacks the ability to differentiate the language, but it proves that children have spontaneity in their mind in the early stages (Rahayu 2018). It was a good indicator for children to be fluent in both languages.

Based on the author’s observation, there was no problem with delayed speech in Kimbab Family (Clahsen & Jessen 2019). All the children have the same abilities to reach every monolingual child’s milestone. Instead, they could choose what language they want to use in a particular community or society (Yusmawati et al. 2018). Next, they could choose what they use to talk to their parents since their parents have different native languages. Then, they also decide what language they use when they talk to strangers based on the community. If they are in the Indonesian community, they will use Indonesian instead of Korean and vice versa. All of these abilities are influenced by family, especially parents who take prominent roles in their children’s language development (Zuraida et al. 2020).

#### 4 CONCLUSION

Each mixed married family has its patterns and norms in language teaching. Each mixed married family also affects their children’s language abilities differently. All the norms applied in a family that follows parenting will produce a pattern, and each family has its pattern. However, from all of it, some significant effects are commonly seen in mixed-married families. Two different languages influenced the lack of vocabulary caused by the children. It is normal since children are still in the language development stage. In this phase, parents have a significant role in encouraging their children to balance both languages. The next is early mixing, or what we commonly call language mixing at a young age. Some previous researchers said it is not a bad sign but a good sign that the children will be fluent in both languages. The last one is the language chosen. Bilingual children can decide what language they want to use in a particular community. Again and again, this ability is also influenced by parents who have prominent roles in children’s language development.

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## Archiving Indonesian online literature magazine as a data resource

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**ABSTRACT:** Since the late 1990s, many Indonesian writers have published literary works on the internet. Most of these publications are extinct, and a small number are still stored in the digital archive of archive.org. However, there is no guarantee that the stored data will be available perpetually. Most likely, the remaining data will soon become extinct. Then, how could we access the availability of early Indonesian internet literature for research purposes? How could it be archived and accessed? As literature published on the internet grows every day, its early development plays crucial documents in the field. This paper describes a strategy to archive the influential literary web magazine of cybersastra.net during its publication between 2000 and 2005. This research reveals that 19179 archived URLs are stored in archive.org. However, the availability of accessible and readable documents is nearly 60 percent. The highest number of documents is the poem consisting of 8.119 titles. This study argues that the publication of literary works on the internet that is no longer living can still be saved before they are entirely extinct. This rescue can be done with a micro archiving strategy for interests on an individual scale but can provide benefits for further research.

### 1 INTRODUCTION

Documentation is a tool to extend memory, deepen it, and expand it as well as wasting our work means wasting our lives, history, past, present, and future (Bauer 2016). Publication of literary products online, in prose and poetry, has rapidly developed since the internet is present in various countries with their respective characteristics. Unfortunately, along with the development of the internet world, many literary websites are turning to new forms, such as publishing on social media. It is exacerbated by the death of literary websites that have contained a lot of literary products. Researchers in the history of digital or electronic literature have tried to archive these works. However, archiving is limited to websites that concern each scholar, especially those that contain literature in their country/lingua franca. Many more online literary works can no longer be accessed, especially in countries that need more attention to website archives, such as Indonesia. Although literature and authors have published literary works on the website, it is challenging to find its archive. Fortunately, the most extensive website archive, archive.org, still saves some literary works data even though they are less complete than the original. It provides an opportunity for researchers to utilize archive data and re-archiving because there is no guarantee that the archive will always be accessible in the future. Previous literary scholars archived printed literature, and now we can use thousands of printed literary products, copies, and original photos as literary documentation.

Studies on modern Indonesian literature often use documents archived by Hans Bague Jassin at the *Pusat Dokumentasi Sastra* (PDS) HB Jassin in Jakarta as research data sources (Mugabe, Utomo & Jasjfi 2021). There are 165.214 documents and 134.177 book titles, including letters, magazines, newspapers, and literary works that have been archived during

and after the life of HB Jassin. He was aware of the importance of writing to extend memory, deepen, and expand it through documentation, as quoted at the beginning of this paper. The institution currently provides a digital edition of easily accessed archived documents from anywhere via its website. Most documents are, however, primarily digitized materials from printed works. It is not easy to find multi-mediated data from internet literature. Even though its emergence has increased more than two decades since the late 1990s, early works remain to disappear in such documentation and archive either in the national archive, national libraries, or university libraries. Some influential sites of online literary magazines were “404 not found errors” after three to five years of online publication. Finding its collection in Indonesian libraries and archival institutions is nearly impossible now. Although some of the current issues on Cybersastra as the significant community of early internet literature groups have been discussed (Campbell 2002; Faruk 2001; Maier 2004; Merawati 2014), there need to be more archival materials on its website. Then, how could we access the availability of early Indonesian internet literature for research purposes? How could it be archived and accessed for further research? As literature published on the internet increasingly evolved today, its early development plays crucial documents in the field.

Before discussing the availability of internet literature documents, the term internet literature here refers to Indonesian literary works published on the digital media of the internet. Other related terms of cyber sastra or sastra cyber (cyber literature), *sastra digital* (digital literature), and *sastra multimedia* (multi-mediated literature) have particular criteria. In contrast, the term electronic literature is unpopular in the Indonesian context. Electronic literature has a close meaning to *sastra radio* discussion before the internet era. The term internet literature here also refers to the medium of the publication itself, specifically, early polemics on cyber sastra, which category is part of the internet literature (Simanowski 2010). Compared to other scholars ‘terms in other countries’, Bouchardon (2017) highlights that each country has its conception of literariness. The global influence of the term is inevitable, but we cannot separate it from a constellation within each culture. In addition, the practical use of literature and computers as a medium will differ from country to country (Bauer 2016). Like printed literature, general technological development and specific social conventions shape internet literature (Hockx 2015). Different terms of the literary phenomenon on the internet reflect its globality within a similar era or digital medium. People also respond to the awareness of its early development differently. Some countries have preserved their documents, and others have neglected them.

Discussing early Indonesian internet literature will always refer to the primary sources of such mailing list groups of literature, blogs, and internet sites. Some printed news and essays on the subject are essential to understanding its dynamics. The issue of its existence became a fierce and fundamental debate, especially its position on printed literary works. The debate is known as the Polemics on Cybersastra. Although there have been plenty of studies on its existence, references to the primary documents, namely the contents of early internet literature, still need to be included. A study published in 2020 reveals that the internet literary community must preserve Cybersastra as part of the cultural product because it portrays literary dynamics in a particular time (Wanti 2020). Therefore, archiving early internet literature in Indonesia is significant – following Jassin’s thought – to extend memory, deepen, and broaden knowledge of internet literature. Neglecting the works of internet literature means ignoring our lives, history, past, present, and future.

## 2 METHODS

Online literary archiving carried out on a large scale requires the attention of policymakers. Most countries with limited funding certainly have specific difficulties. The archiving model implemented by certain institutions, whether a national archive, national library, or university library, requires a solid drive to make the policy. According to Brüger (2005), this

archiving mode is called macro-archiving. As for if a scholar or researcher has the knowledge and awareness to prevent the extinction of the data source of online literary products, then the determined choice is to immediately archive the website, we will use as research data. This online literary website archive has a small scale according to the interests and abilities of researchers. This archive, borrowed from Brüger (2005), can be used as a micro-archive.

Micro archiving will be appropriate to be carried out by researchers, especially researchers of website history, which in this case is an online literary magazine. To counter the threat of extinction of Indonesian online literary magazines, we chose the most commonly mentioned and influential online literary magazine in Indonesia. There are several published online literary magazines from the mid or end of the 1990s to the early 2000s. However, we chose the filing of a magazine that is still being discussed today in the context of the history of Indonesian internet literature. Since the filing scale focuses only on selected magazines, we can refer to it as micro-archiving.

In conducting archives, the micro-archiving strategy made it possible to archive the literary web magazine *cybersastra.net* during publication from 2000 to 2005. Brüger (2005) emphasizes this strategy on archival research conducted by individuals to meet their research needs. Our business archiving the website *cybersastra.net* is part of our research on polemic *cybersastra*, where the primary data is on this dead website. The source of archive data here is every screenshot of the website *cybersastra.net* which is in *archive.org*.

This website conducted archiving techniques by saving all the parts of the *archive.org* archives. The established storage is by changing the form of screenshots to PDF form. This PDF form I collected according to the time sequence of publishing each article, essay, or literary work in the online literary magazine *cybersastra.net*. Alternatively, we are also scabbing the entire contents of *cybersastra.net* stored in *archive.org* through a particular application. The result of this scabbing is a text. This technique speeds up the work of retrieving data stored by *archive.org*. Unfortunately, the results of this technique are not satisfactory because it contains many links and contents of the website that cannot be opened and do not follow the publication date of each work. So it still needs to work two to three times to get the data of the *cybersastra* that is ready to be observed.

The final step in archiving is, of course, storage. We store all the collected data in a particular folder on Google Drive. In addition, GitHub is also our consideration in saving the results of re-filing this website. This data is in the form of pdf and txt. PDF data made it easier for us to examine directly and in detail the content of a literary work published in this online literary magazine. We can also still quickly search into the data collected in pdf. Therefore, to check the website page link, the pdf format has saved the link of each page taken from *archive.org*. This link is also convenient if we want to see the appearance of the website archived by *archive.org*.

### 3 RESULTS AND DISCUSSION

#### 3.1 *Digital archive of early internet literature*

The internet use as a medium for Indonesian literary works publication started with internet presence around 1990. The number of users grew in 1995, significantly increased in 1999 (Lim 2005), and had 511.000 subscribers in 2001 (Hill & Sen 2002). A survey of mailing lists in 2001 mentioned *penyair@egroups.com* as the fourth most active and lively community producing 23,001 threads (Purbo 2002). The mailing list group was the embryo of *Cyber Sastra* online literary magazine. Literary discussion in the yahoo mailing list platform accompanied by poems, short stories, and literary essays publication. Group members could directly post comments to respond to specific published works. Nanang Suryadi, the initiator of *Cyber Sastra* online magazine, said that the mailing list discussed the possibility of launching a website focusing on literary publication and discussion. The idea brought the



community to launch a website of [www.cybersastra.net](http://www.cybersastra.net). This website also connects literary websites and online literary magazines. Among them, [bumimanusia.or.id](http://bumimanusia.or.id), [ceritanet.com](http://ceritanet.com), and [puisi.net](http://puisi.net) were popular online literary magazines. Apart from [ceritanet.com](http://ceritanet.com), all those magazines were “404 not found errors” or disappeared. Characters, writing styles, and dynamic discussions within those sites reflect its early development. After two decades, the current development of internet literature has rapidly evolved in various platforms such as Wattpad, Facebook, Twitter, Instagram, and the commercial sites of Amazon and Google Books. Early development plays a significant role in tracing the genesis of today’s internet literary forms in depicting the history of internet literature and describing philosophical debate on its existence and characters.

It is not easy to find documents on early internet literature in Indonesia. Most online literary magazines and other related sites that have been the central issue of discussion and controversy at the time are gone and not live again. Many of them have switched content to completely different sites and different owners. Fortunately, there is an excellent initiative from the gigantic digital archive of Internet Archive’s Wayback Machine (IAWM, <http://web.archive.org>) to preserve those online literary magazines. Some online archives, such as [marc.info](http://marc.info), [mail-archive.com](http://mail-archive.com), and [w3.org](http://w3.org), have not archived mailing list groups like [penyair@egroups.com](mailto:penyair@egroups.com). IAWM has a minimal collection of it. Even though the archived documents are incomplete, IAWM has archived much of the content of online literary magazines published in the late 1990s and early 2000s. The crawling method in the archive excludes multimedia documents or literary works that include audio and moving images. Afrizal Malna’s interactive and multi-mediated works published in the former name of [cybersastra.net](http://cybersastra.net), ‘*Taman Sastra*,’ for example, were different from the original site. Faruk’s observation of Malna’s works as they were live has described its multi-mediated interactivity and the hybridity of texts (Faruk 2001). In the archived version, the works appear mainly based on HTML or CSS texts and jpeg or gif images (Rokib 2021). Other archived materials in IAWM, such as Dewi Lestari’s [truedee.com](http://truedee.com) and Taufiq Ismail’s [taufiq.ismail.com](http://taufiq.ismail.com), are no longer multi-mediated.

Today, we can access those archived materials of early internet literature as research data. However, there is no guarantee that the giant digital archive of IAWM will always be sustainable and easily accessible. If there is a policy change, disaster, or political change, the IAWM site could be challenging to access and even disappear. Primary source material extinction could also erase our memories of those works as cultural heritage (Wanti 2020). This possibility must be considered a serious challenge for web historians, especially internet literary history scholars. Understanding particular aspects of the documents prevent a literary history detachment. Within Cyber Sastra magazine, for example, hundreds of essays and literary critics discuss the form of virtual and hybrid texts of literary works. Literary essays, in addition to literature genres, are the primary sources to explain Indonesian literature’s streams, engagements, and movements (Kratz 2000). Scholars in the field need to consider this issue by doing personal archives, amateur re-archive, copying copied sites from their original, and storing archived materials in accessible storage and repositories while collecting digital data during research activities. This individual activity of digital archiving toward web materials, following Brügger (2011), is micro-archiving in which a scholar carries out a small scale of archiving as an object of study.

In contrast to micro-archiving, large-scale archiving carried out by institutions such as the National Archive of ANRI, the National Library (*Perpusnas*), and university libraries are essential. However, this macro-level needs to be revised considering web archiving and early internet literature sites. University libraries with a major in Indonesian literature also contribute to the threat of document extinction if there is no more concern about internet literary history. The practice of individuals aware of the importance of internet literary archives plays a vital role in preserving internet literature. Small-scale archiving with amateur handling are encouraged to preserve the web as a cultural heritage. Current accessible and live literary archive sites, such as [sastra-indonesia.com](http://sastra-indonesia.com), [lakonhidup.com](http://lakonhidup.com), [ruangsastra.com](http://ruangsastra.com).

com, and other personal websites, have played an active role in documenting contemporary literary works on the internet. At least before these private sites go extinct and dark, like in the late 1990s and early 2000s, serious attention is needed to preserve them. Other active and live literary sites of basabasi.co, sastramedia.com, ruangliterasi.com, riausastra.com, and hundreds of similar sites need to be archived in a better archive than IAWM did for future research purposes.

Some data could be accessed through digital archives, while most are challenging to find. Collecting archived data and maintaining it is an essential and indispensable option for document rescue. A way to do this is re-archiving from the IAWM. Let us compare it to other digital archives such as archive-it.org, the internet archive collection at the Library of Congress, the digital collection at the Leiden University Library, and the Indonesian website archived at ANU Library. IAWM collection can still be the primary reference to find many sites on early internet literature in Indonesia.

### 3.2 Archiving *www.cybersastra.net*

From several sites, especially early online literary magazines in Indonesia, we could still find data at IAWM. One of the most influential online literary magazines in the early 2000s was Cyber Sastra. Compared to its partner, bumimanusia.or.id, this online literary magazine has a more protracted publication time. In 1999, the magazine was published on a personal site of 'Taman Sastra' on geocities.com. Then from 2000 to 2005, the site's address changed to *www.cybersastra.net*. Based on data archived by IAWM, there are 19179 document views on the site. The number includes a small number of error documents. Thousand digital documents are still easy to read. It can display text clearly, nearly similar to live magazines two decades ago. However, the deficiency of some other documents is multi-mediated texts, such as texts with audiovisuals, certain types of images, and links that do not appear and are unreadable anymore.

Albeit incomplete, the contents of Cyber Sastra magazines are archived orderly by IAWM. Those contents include editorials, poems, short stories, essays, novels, dramas, book reviews, author biographies, and literary activities between 2000 and 2005. Literary archivists could also read comments on published works, especially poems, short stories, and essays. Likewise, the 'forum sastra' (literary forum) section, which contains discussions about the creative writing process and conversations about literary discourse, is available in the archived materials.

Archiving those available data for further research will undoubtedly anticipate documents from total extinction. As mentioned, digital documents archived and stored in IAWM remain vulnerable to legal standing, disaster, and political interests. Re-archiving and copying digitally from the IAWM data could prevent early internet literature from total extinction. In the study of early Indonesian internet literature, Cyber Sastra magazine is the key to illustrating the fundamental debate over the existence of literature in the new media of the internet at that time. The rapid development of literature on the internet, which is slowly being accepted by the public today, reinforces the importance of magazine archives in understanding the history of early internet literature.

From its quantitative side, each archived genre of literature used as research data has various amounts. After archiving accessible data from IAWM using pdf format, poem documents have the highest number of readable materials (Figure 1). There are 1.105 documents of short stories, 766 essays, 17 novels, and four playwrights. The number does not include the number of comments and discussion threads. 2.961 comments can be accessed, while the discussion number on the 'forum sastra' has 759 threads. Both comments and discussion threads are also important data to observe readers' responses, the reception of the literary society, and the dynamics of internet literature at the beginning of its emergence.

From the total number of 19179 archived URLs and their documents by IAWM during the publication period of Cyber Sastra between 2000 and 2005, the availability of accessible

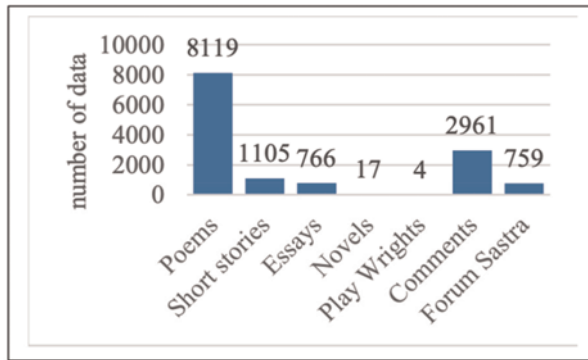


Figure 1. Availability of accessible data archived by IAWM.

and readable documents is nearly 60 percent. As shown in Figure 1, playwright documents are the smallest in number. Even though it is shorter than novels in terms of pages, there are only four documented titles of published playwrights on archive.org. It is also possible that they published playwrights more during live publication. Nevertheless, as it can be read now in the archived data, the playwright has only four titles. In contrast, the poem has 8,119 titles, the highest number of documents. The documents consist of 282 poem titles in 2000, 1587 titles in 2001, 2486 titles in 2002, 963 titles in 2003, 1129 in 2004, and 1672 in 2005.

Apart from its quality and academic writing standard, the number of poems shows how this online literary magazine published hundreds and more poem titles per year, except in 2003. There were many spaces for publication, unlike the limited space of printed literary magazines. It means that there were hundreds of poem titles published every month. Much criticism addressed the magazine and its community, questioning the editing process and publication quality. This issue echoed and became a polemic between the pros and cons of publishing literary works in online magazines. The research topic that refers to thousands of documents is needed to find the unique character of this early internet literature, including its quality.

### 3.3 *Micro-archiving*

As many institutions with professional technical expertise in digital archives are unaware of the early internet literature, the individual hand is needed. A researcher with amateur digital archiving skills and personal purposes usually uses a personal PC or other devices with limited storage space. In this case, the archiving activity is limited to particular objects and focus. That is why we call it micro-archiving, considering its scale of small archiving (Brügger 2011).

To anticipate the extinction of Cyber Sastra documents, re-archiving through digital archives will be helpful. A researcher can do a simple digital archive manually or automatically. In contrast to the manual method of archiving printed documents, such as H. B. Jassin did by cutting newspapers and clipping them by saving page by page on the website, we can do this manual method of archiving digital magazines. Since the online literary magazine disappeared, re-archiving from the IAWM has been beneficial. In this case, we saved a thousand pages of cybersastra.net from IAWM. Starting digital archiving is simply visiting IAWM on [www.archive.org](http://www.archive.org) and typing the website's address, [cybersastra.net](http://cybersastra.net). On the home page, there is a calendar containing the date of crawling and automatic archiving. At each highlighted date in the calendar, we click page by page and save it via pdf format using a chrome browser. Many times, there are two, three, or four pages on one page and so on after saving it into pdf format. Hence, it depends on the length of the text on each page.

This pdf format usually eliminates some appearances of original texts from IAWM. After collecting pdf files containing several pages, we could easily combine the documents per edition, month, year, or make all the contents during publication into a considerable file size. When an archivist prefers not to convert in pdf form, screenshots on each page are also possible. However, it takes time since there are thousands of pages, and multiple screenshot files are often on one page. Unlike pdf format, the disadvantage of this method is also found in specific text searches, certain keywords, or certain topics because the screenshot is a static text and image.

Besides the manual way, the automatic method of re-archiving by crawling the URL address from web.archive.org is advantageous. This method requires simple computer data coding skills. The first step of this method is entering a specific site address via “[http://web.archive.org/cdx/search/cdx?url=cybersastra.net\\*&output=txt](http://web.archive.org/cdx/search/cdx?url=cybersastra.net*&output=txt).” In this case, cybersastra.net is a site we archived, but we can replace it with another chosen site. We can also limit the archive from year to year by adding ‘&from=2000&to=2005’ after the mentioned URL. It will show many cybersastra.net links that archive.org has successfully archived. However, this method requires a unique selection because not all links displayed can be accessed. From the 19179 archived links of cybersastra.net, many contents are unreadable, so an archivist had to make another selection. The most important aspect of this automatic method is storage location. Enough storage space is encouraged to save thousands of links and pages. The easiest way is to create a repository on github.com because it is accessible from anywhere with internet access.

Online repositories of github.com and others, including a personal website, offer open access for other researchers in a simple way. Digital archive storage in a website allows readers and researchers to find a particular topic by typing keywords and finding unique themes through search engines such as Google. For analyzing texts, online repositories facilitate digital, searchable data by converting files to txt, CSV, or other formats. We can analyze thousands and millions of texts from different approaches, including network analysis, sentiment analysis, topic modeling, and close reading approach of content analysis using either open source or closed software. Approaching the multi-mediated character of internet literature needs a digital process to achieve its pattern. In previous research on pros and cons within polemics on Cyber Sastra, the traditional close reading approach of analyzing specific text one by one on thousands or even millions of texts needs a long time to do. Using the element of machine learning within relevant software to analyze thousands of texts could help the first step of the analysis. Then the close reading of content analysis could be advantageous for profound depiction.

#### 4 CONCLUSION

The challenge of collecting digital archives of early internet literature encouraged the author to write this research note. Today we can still easily find digital archives of early internet literature, especially at IAWM. Even though all existing data are limited in number and their original forms (images, GIFs, or audiovisuals), many text-based forms of data remain available. Re-archiving archived data is crucial in preserving the memory of the early history of internet literature. A researcher can practice small-scale or micro-archiving on available digital documents for her/his research purpose. To do archiving, a researcher can practice either manual or automatic methods. On the manual method, saving page by page of selected website links on archive.org could be an easy and straightforward way. The author did this method to archive [www.cybersastra.net](http://www.cybersastra.net), the most influential online literary magazine in the early development of internet literature. Besides, the automatic method is the fastest way for archiving needs, such as computer coding skills. The author also applied this method to compare manual archive results with the computational result. Then, a researcher must store archived data in a specific open repository so that other researchers can use the data.

Digital data archiving skills are essential for today's internet literature researchers and internet studies researchers in general. Based on experience, paying attention to the website's archive for internet research plays an important role. In Indonesian internet literature, archiving live literary websites, including their text, images, audiovisuals, and other forms of data, is a crucial practice. It can anticipate complete damage or total loss of relevant data resources.

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# Analyzing educational language policy using zone of mediation framework

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**ABSTRACT:** Seeing schools as a non-vacuum, non-neutral site, this single-school case study examines the appropriation of English as a Medium of Instruction (EMI) in Indonesia's International-Standard School. Using the zones of mediation framework, the school-wide appropriation of EMI policies is analyzed in terms of technical (e.g. structure and regulation), normative (e.g. values, norms), and political (e.g. identity, power relations) dimensions. The policy appropriation derives from an equity-minded analytical model for weighing the multiple interactional layers in policy practice. Generating data from interviews and documentation, findings reveal elements of technical, normative and political dimensions of the school-wide EMI practices and how they could lead the policy's course into a stability continuum.

## 1 INTRODUCTION

This study attempts to explore language policy appropriation by analyzing the policy's technicalities, norms and politics as a part of a school-wide appropriation. This work is rooted within an interdisciplinary concept of educational language policy and a zone of mediation. In these two concepts, language policies and practices in schools are seen and analyzed by considering multiple events, actors, artefacts and their interactions across settings and time. Each variable channels ideas, values and forces from and into the schools, resulting in a complex policy interaction that often shapes the policy course and outcomes in terms of stability, conflict or resistance, or any tone in between (Oakes et al. 1998).

By applying a zone of mediation framework, this study describes how a school translated a national language policy into deliverable micro-tasks, norms and roles within their setting. The analysis is synthesized into three policy dimensions—technical, normative and political—to explain the appropriation of English as a Medium of Instruction or EMI policy in Indonesia's International-Standard School (IS-School), commonly termed RSBI in the Indonesian language.

English as a medium of instruction (EMI) refers to an instructional mode in which English is partially and incrementally used to teach non-language courses to learners who do not speak English natively (Baker 2011). The EMI policy in Indonesia (2005–2013) was coupled with an international education initiative called the International-Standard Schools Project (IS-Schools), where top-performing schools were nominated and evaluated for International Standards accreditation.

This research is intended to contribute to a critical discourse of Indonesia's language policy by identifying aspects of micro implementations beyond pedagogical structure and arrangement and by portraying teachers' agency in managing cultural forces, ideologies, and politics embedded in the EMI policy. Findings are constructive for developing comparative strategies on what could be done in the future in cost-effective and cost-sensible ways. Understanding the past gives a prologue for future language policies.

## 1.1 *Educational language policy*

There are several conceptualizations of educational language policy under different terminologies, orientations, and scopes (Lin & Martin 2005; Spolsky & Shohamy 2000; Tollefson 2012). Educational language policy is part of the language policy field, which arises from the facts that (i) schools have been increasingly studied as sites of language policy contestations; (ii) there has been growing concern and interest in language acquisition planning in/for schools; and (iii) many recent theoretical and conceptual works in language policy were based and developed on empirical work in education sectors, schools, and classrooms (Johnson 2013).

Johnson (2013) suggests the term *educational language policy* to illustrate the official and unofficial policies created across multiple layers and institutional contexts (from national organizations to classrooms) that impact language use in classrooms and schools. It signifies the engagement process of policy actors across institutions and levels, in which they are impacted by one another in shaping a policy course in ways that facilitate or hinder policy goals.

The concept employs several fundamental tenets and approaches. Educational language policy is a *multi-layered process* comprising policy creation, interpretation, appropriation, and instantiation (Johnson 2013). The process indicates the *agency power* of every policy actor, from legislators, politicians, national and ultra-national institutions, and micro-implementers like teachers and family members (Ricento & Hornberger 1996). The process entails *sociocultural and political reciprocity* across policy events and actors. As such, a critical analysis of educational language policy should touch upon both *implementational and ideological* space (Johnson 2013). Implementational areas translate technical measures of policy, such as classroom activities and teacher support. Ideological spaces constitute different and potentially divergent ideologies and orientations about language. With its discursive nature, approaches in educational language policies demand close attention to *linguistic ecology*. Hornberger (2002) suggests that policy activities must consider interactions between languages and the psycho-sociological environments of their speakers. This is apparent in issues of language evolution (spread, shift, change), language endangerment (loss, decrease), and language environment (multilingual contexts and multiple socio-political forces).

## 1.2 *Zone of mediation*

Originating from the politics of the education field, the zone of mediation is considered an equity-minded framework in response to the fact that most studies in educational change have focused on a policy technicality without balancing the analysis on and views from normative and political aspects. The lack of research on norms and politics is partly due to the dominant history of factory ways of structuring school systems, which assumes an organization is a group of people. People are good behaviour, compliance, and cooperation so that regulation or a policy transition will run smoothly (Oakes & Lipton 2002). Consequently, improvement strategies in industrial sectors have been translated into school systems, resulting in outcome-oriented measures, such as product ratings, scores, performance points, and infrastructure indexes, among others (Oakes et al. 1998; Oakes & Lipton 2002). Managing policy technicalities has been more affordable than dealing with conflicting norms, cultural struggles, and unaligned political interests (Oakes et al. 1998). However, embracing a strictly-technical, equilibrium mindset to school reform contexts while disregarding cultural nuance and political identity within and beyond schools often led to awry or wicked policy situations.

Oakes et al. (1998) promote a zone of mediation as a theoretical framework to analyze educational policies. Within a mediation framework, schools are situated within particular local enactments of more significant cultural norms, rules, incentives, power relations, and

values. These forces promote either stability or change and set the parameters of beliefs, behaviour, and policy in schools. The intersection of points around a particular issue shapes the zone of mediation for that issue.

The definition embodies *three* ways of making sense of the school's policy dynamic. *First*, schools are formally and hierarchically organized interactional settings, distinguished by power relationships (roles, associations, positions) among internal and external members of the schools, whose interactions with any policies represent local enactment of larger forces (Oakes et al. 1998)

*Second*, schools are considered “mediating institutions” because they mediate larger social, economic, and political forces into particular sites that impact individual members (Oakes et al. 1998). The term “forces” encompass objects, people, groups, values, phenomena, strategies, and events, which range from the history curriculum, government legislation, judicial decisions, demographics, community trends on housing, nutritional needs, economic and market forces, social/state political climates, educational influence groups (i.e., teacher unions, publishers, foundations, accrediting and testing agencies, and professional associations), district history, individual players within districts, political ambitions, literature, and research, to the media highlights, among others (Oakes 1992; Oakes et al. 1993, 1998; Welner & Oakes 2008)

*Third*, these interacting forces affect how individuals or groups respond to the policies. The forces within and surrounding the mediation zone enable and constrain individuals and groups to engage in “situated behaviours,” allowing the persons to respond appropriately to the situations.

### 1.2.1 *Technical, normative, and political dimensions*

With the above characteristics of schools as a zone of mediation, Oakes et al. (1998) propose three policy dimensions—i.e., technical, normative, and political—to analyze interacting forces within schools (or any mediating institutions) (Oakes 1992; Oakes et al. 1993; 1998; Welner & Oakes 2008). They consider the analysis equity-minded, as it involves examining a policy's normative and political aspects beyond technical dimensions.

*The technical* dimension of policy includes organizational structure and internal functioning of schools, including time and resource allocation, equipment, materials, and curriculum. Technical aspects often centre around policy structures (e.g., arrangement of space, time, people, and materials), strategies (e.g., governance, pedagogical rules, curricular activities), and knowledge or capacity building (e.g., adult learning, teacher training) (Oakes 1992; Oakes et al. 1993; Welner & Oakes 2008). It focuses on pedagogical and managerial knowledge that affects educational purposes and, eventually, school practices, structures, and strategies. From technical perspectives, which reflect an industrial or corporate learning model, the school aims to produce pragmatic outcomes, such as academic achievement and workforce preparation (Oakes & Lipton 2002). The school's practices and structures are then designed to accomplish these programmatic, technical outcomes.

*Normative* aspects involve a critical look at the school's “deep culture” or common-sense understanding of school cultures (Oakes 1992). Normative forces arise from beliefs and values, reflecting both positive and negative conventional conceptions, deep-seated beliefs, and attitudes. Normative changes require culturally responsive leadership at the school level. The school level also entails a deep understanding of cultural capital—e.g., values, norms, and beliefs—embraced by internal school members and how these forms of capital affect their opinions and practices relevant to the policy.

*Political* dimension refers to the dynamics of existing power relations among internal and external school constituents that affect and are affected by the policy. School's political sizes could range from conflictive “dark side” politics and group-level behaviours, decision-making processes, and cooperative consensual to formal and informal actions by individuals and groups to overtly or covertly achieve their goals (Blase 1998). This concept is relevant to a school's culture, where pedagogical and managerial practices are driven by



conflictive-adversarial (power over) and cooperative-consensual (power with) approaches, despite the ideal intention of participatory or democratic rhetoric.

Each of these perspectives—technical, normative, and political—resembles a lens that magnifies one dimension of a particular policy practice while temporarily filtering out the others. Technical, normative, and political considerations allow us to examine traditional school practices in the context of the beliefs, values, relationships, and power allocations that keep the policies in place. The three dimensions also allow us to consider how a proposed curricular, organizational, and classroom change could challenge the regularities of school cultures—something that is rarely questioned or even challenged.

## 2 METHODS

The purpose of the study is to examine a school-wide EMI policy appropriation by looking at how the policy's technical, normative and political aspects contributed to either stability or resistance within the school, as recalled by teachers. A few main questions guide it: How did the school appropriate the technical structures and arrangement of EMI policy? What were some normative forces that contributed to the policy appropriation? What political events and processes affected the policy nuance within the school? How did the interaction of the three dimensions lead to language policy maintenance in the school?

The study is qualitative, employing an interpretive policy analysis (IPA) tradition (Yanow 2000), looking at opinions, arguments, puzzles or tensions, and subsequent results of changes. IPA researchers consider differing opinions and values as alternative ways of viewing, believing, understanding, and doing based on differences in actors' experiences, positionalities, and backgrounds (Schwartz-Shea & Yanow 2013; Yanow 2000). Analysis and findings presentation is based on contextuality, knowledge construction, and explanatory sensibility principles.

Using a typical-case sampling, the Olympus High School in Central Java was selected for a case study because the setting is considered a typical, average profile of IS-School. Data were generated from semi-structured interviews, via phone calls, and during site visits, with nine teachers of Olympus High School who applied EMI at various degrees in their classes. Documentation techniques were utilized to gather government documents and information from school and teacher archives, including exam files, local policy memos, textbooks, web-based information, and photos of policy-relevant activities.

The analysis was conducted inductively through multiple readings and interpretations of texts, meanings, and discourses that emerged in the interview transcripts, school documents, teacher archives, and supporting policy documents. Unlike deductive analysis, the primary purpose of the inductive approach is to let the research findings emerge from the frequent, dominant, or significant themes inherent in raw data without the restraints imposed by structured methodologies (Pascale 2011). It synthesizes a series of reinterpreted connections between context and data by constantly seeking, revisiting, and reorganizing themes and sub-themes until reaching a certain level of data saturation. A laborious and orderly reading and coding of the transcripts allowed significant themes to emerge. Similarities and differences across sub-themes were also explored. Much of the analysis involved multi-layer coding and notes, conducted in a qualitative data management software MAXQDA.

## 3 RESULTS AND DISCUSSION

### 3.1 *EMI policy rationales*

To interpret the rationales of a national, top-down EMI policy, it is necessary to understand a macro-level overview of working relations among state and other stakeholders, domestically and internationally. The Indonesia EMI policy was a fraction of a worldwide English Bilingual Education trend within formal schooling in non-English speaking countries where

the English language was/is not used natively (Coleman, 2011; Dearden, 2014). The British Council uses the English Bilingual Education (EBE) term to refer to generic practices of English-mediated instruction targeted at already-bilingual student groups in many non-native English-speaking countries. These EBE or EMI were mostly top-down policies and funded by national authorities. Within the country, the EMI policy was heavily tied to internationalization amidst the initial implementation of school-based management.

The EMI policymakers' perspectives were very much macro in scale, addressing the relationship of language policy and/or development rather than individuals' bilingual state and language acquisition processes. There are at least three main themes in the EMI policy rationales: economic productivity, literacy for global competitiveness, and political identity.

The second motive, literacy for global competitiveness, has become a narrative behind the massive intensification of the English language curriculum. National literacy refers to individuals' ability to read, write, and speak in the polity's official language(s) and compute and solve problems to function in society, hence participating in the nation's development. Literacy planning involves deciding what language(s) are taught and used as media of instruction in schools to facilitate national development, including competence in foreign languages as a prerequisite for action at national and global levels (Liddicoat 2007; Tollefson 2012). Hence, the EMI policy was a systematic attempt to affect learners' language behaviour to enable them to perform social and economic activities in or through the English language in development sectors, from science, technology exchange, multilateral trading, and employment to economic migration.

The third rationale deals with a socio-political strategy for economic alliances, which requires a continuance of language use for cultural diplomacy schemes. It defends the importance of recognizing personal and group differences and interdependence. In the case of EMI policy, the choice of English entailed the recognition of Southeast Asia nations as one socio-political entity. Having English as a linguistic commonality, the Association of Southeast Asia Nations (ASEAN) country members collectively agreed to recognize English as the working language for the ASEAN Economic Community (Hew 2005). The ASEAN community pact explicitly promoted English for direct communication among ASEAN members and more active political participation in the broader international community. The EMI policy rationale supported the official use of the English language for political diplomacy, economic activities, and cultural exchanges across Southeast Asia regions. At a macro, national level, the formal status of English language use in IS-Schools was framed as a political and economic strategy in the economic and diplomatic interests of the nation, without any political orientation related to colonialism or postcolonialism agendas.

### 3.2 *EMI policy appropriation at the olympus high school*

Findings are based on teachers' experiences with EMI practices in the Olympus High Schools from mid-2006 to mid-2013. During stages of policy appropriation, there were challenges and frictions, both overt and covert, solved and unresolved. The day-to-day micro-implementation was not all smooth. However, those challenges and tensions did not lead to significant conflicts that led to policy rejection. Strictly from teachers' perspectives, the EMI policy did not meet effective resistance. Responses toward EMI policy at the Olympus School fell in the stability range with minimal conflicts. Had there been no termination in 2013 by the National Constitutional Court (2012), the Olympus School would have continued this language policy.

Such relatively uncontested, stable policy appropriation was partly because of school members' pre-existing and emerging norms. Political consensus between institutional elites and EMI teacher implementers also contributed to the smooth transition and decision-making process. Policy interaction across technical, normative, and political aspects of EMI policy at Olympus School was relatively stable, resulting in a smooth policy appropriation and continuation.

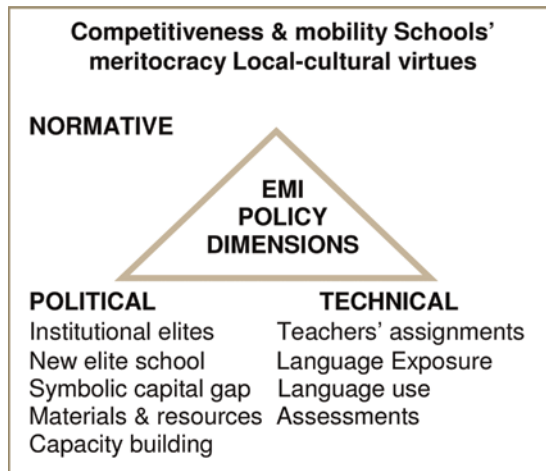


Figure 1. Technical, normative, and political dimensions of EMI policy.

The roles and relationships of the three dimensions are visualized in Figure 1. It magnifies how specific interacting forces—technicalities, norms, and politics—within the Olympus School had shaped the stability of policy appropriation and outcomes.

### 3.2.1 *Technical fixes led to wicked challenges*

Technical dimensions of a policy are described as structures (e.g., arrangements of people, materials), strategies (e.g., pedagogical and managerial governance about specific policies), and knowledge (e.g., adult learning, teacher training) that are central to achieving the policy goals (Oakes 1992; Oakes et al. 1993; 1998). The most significant change with EMI policy was using English to mediate instructions, specifically in Math, Chemistry, Biology and Physic courses—presumably with the same content materials across countries worldwide. Before the EMI era, all learning activities were mediated in Indonesian, including classroom talks, materials, textbooks, discussions, exams, and homework. The changes occurred incrementally after being nominated as International-Standard School in early 2006. These changes in instructional language led to many other modifications, from teachers’ assignments, rules of language use, and language exposure, to material benchmarking, assessment principles, and capacity building.

*Teachers’ voluntary assignments.* The voluntary scheme was a strong call for math and science teachers who were prepared and willing to go the extra mile. It was optional for all teachers who were unprepared and not fluent in English. No sanction was imposed. Other subject teachers were allowed to sign up as long as they were relatively fluent and familiar with using English, except for those teaching the Indonesian language, civics, and religion.

Another example was teachers’ voluntary assignment to apply EMI. Several teachers practising EMI elevated the school’s reputation as the first IS-School cohort committed to instructional innovations. However, privileges earned by EMI teachers had created a group of institutional elites defined by English language capacity. This created a symbolic political division among school teachers, especially with senior ageing ones.

### 3.3 *Normative pulls: mobility, meritocracy, and local virtues*

Most teachers interpreted, believed in, and valued the EMI policy associated with international mobility, utility values of English, and the school’s excellence, tied with local cultural and moral virtues. These beliefs surrounding EMI policy in the Olympus School represented

vital norms and values that interacted with the technical and political decisions in appropriating the policy and kept them experimenting with it to their maximum capacities.

*Mobility: competitiveness and English economic values.* Teachers believed that promoting English as an additional language of instruction was deemed necessary and that EMI practices would improve students' English language capacity. Improving students' competence in English as today's international language was an unquestionable aspiration for them, regardless of teaching methods. Competence in the English language is associated with the broader potential for academic competitiveness and mobility in and abroad. Competitiveness is perceived as participation in scholastic championships at national and global levels, and mobility is understood as the potential to study abroad after graduating from high school, college, or university. The highly-appraised attitudes toward the English language have deeply penetrated society, where English is favourably valued for its utility in academic and business sectors and overly correlated with globalization.

The above beliefs and ideas—student competitiveness and mobility, positive attitudes toward English, school excellence, and silver-lining culture—had powerfully shaped the EMI policy course and functions at Olympus School. Interacting with external forces (e.g., societal beliefs and media portrayals), these norms laid the foundations for what constitutes EMI practice in an International School to-be over the years. These values together consciously and unconsciously drove and sustained daily EMI decisions and practices and kept the school members participating in the policy in any way they could, supposedly for students' mobility and the meritocracy of the school.

#### 3.4 *Landscapes: New elites, incentives, and growing gaps*

Another question remains: how could the new norms on being international schools curtail the calamity of policy logistics and resources? The answer was that a smooth policy transition and appropriation would necessitate a redistribution of valued resources, materials, and intangibles (e.g., authorities, incentives, privileges). The critical political themes of EMI policy at the Olympus School were exhibited in the formation of the school's institutional elites (along with their new authority, incentives, and privileges) and the rising status of the Olympus School as the new elite international school (along with their new meritocracy status and monetary incentives).

*Institutional elites.* The Olympus institutional elites comprised teachers and staff assigned and involved in the school's internationalization team. The structure and roles of this team represented a political power redistribution and diplomacy process. With their authority, the team led and coordinated most of the EMI technical arrangements—including planning, implementing, and redesigning new strategies. Their leadership tasks involved a political process of persuasion, deliberation, and compromise. From the beginning, part of their job was about political bargaining acts to get buy-in or committed agreement from as many school members as possible. It was also implicit in their tasks to propagate new emerging norms (i.e., what an outstanding international school should entail) and to pave the way for trying the EMI policy—a completely new language practice. Once the school members embraced the new EMI norms and practices, the team continued to improve all members' commitments and participation through selected incentives (e.g., training, scholarships) and compromises (e.g., rules of language use percentages).

*New elite schools.* The political dimension of EMI policy at Olympus School represented micropolitical shifts and dynamics within and across public and private schools. The transformation of the Olympus School—from an independent National-Standard school to an International-Standard institution—implied the creation of a new elite public school in Indonesia's schooling marketplace. The “elite” status of Olympus School was even complemented with government grants and additional tuition fees—all of which were allocated for physical and non-physical curricular development, which might not exist or endure without such grants.

Political forces often appear through demands and concerns of stakeholders or constituents that could lead to power relation imbalances. This condition is why it is vital to look at the political dimension, as it helps explain the interaction between technical structures and normative aspects of the EMI policy in the Olympus school.

#### 4 CONCLUSION

From the zone of mediation perspective, schools are situated in their local context, history and political structure. Schools mediate, counteract and re-enact internal and external forces into their school-wide policies, practices, and values, which are unique to each school's context. Arguably, each mediation zone may differ, depending on the school's situated enactment and the issues at hand. The mediation zone is constantly in flux because it depends on individuals' perceptions or standpoints. At the same time, an individualized and collective zone also changes with time, identity, and place.

This finding should speak to those who criticized or undermined teachers' and school leaders' capacities in managing EMI policies. Teachers' experiences and beliefs showed that Olympus High school could successfully address and appropriate the policy demands into deliverable tasks, despite identified problems and challenges. Successful implementation was seen from the fact that (i) the policy did not meet any significant resistance, (ii) the school was able to negotiate the policy deliverability that was manageable for teachers while still complying with the primary rationale of the policy, and (iii) there was a significant increase in the school's participation in English-mediated forums and activities, both for students and teachers. Critics and resistances were admittedly there, including teachers' decreasing participation in the English course and the low number of teachers willing to voluntarily apply EMI in their classrooms. However, these did not disrupt the policy continuance in Olympus School.

Teachers' responses and engagements affect the natures and outcomes of the policies, which could modify the policies' course into a stability-versus-conflict continuum. The continuum could range from a blind acceptance to an extreme rejection or from a negotiated consensus to organized resistance. If a policy response falls within the zone of tolerance, it will likely proceed in a smooth, stable, and uncontested manner; if it falls outside the boundaries of the values, it will likely be challenged or confronted.

At Olympus, normative and political dimensions of the EMI policy helped reduce or eliminate resistance. Policy transition was relatively subtle and without significant confrontations. Meanwhile, outside the school, the policy debate at the macro level was loaded with normative issues. That normative issues include values and beliefs on linguistic exclusivism, social divisiveness, and endangered nationalism.

This study demonstrates that technical aspects must be accompanied by normative and political cultivation for a successful, smooth policy change. Changing or altering learning patterns is easy, let alone shifting norms and political power distribution within a school's network. As difficult as they are, neglecting such normative and political aspects would cost even more

This section is taken from the author's unpublished dissertation (Sundusiyah 2019), accessed from: <http://d-scholarship.pitt.edu/38038/>.

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## A Javanese wordplay using affixation and truncation processes in northern Surabaya: Narrative inquiry

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**ABSTRACT:** Language game, including wordplay and speech disguise, also known as ludling, is a phenomenon of modifying words created by native speakers of a language to conceal the actual meaning of what the speakers are saying. As one of the languages with many speakers, Javanese has also experienced the phenomenon of language games for a long time and is still actively happening today. A type of wordplay from numerous Javanese language games occurs in Ampel, a region in the north of Surabaya, with different characteristics from most modification processes in language games worldwide. Therefore, this research analyzes information related to the study objectives using a qualitative method of interviews and observations with the wordplay users and non-users. The study focuses on (1) how the Javanese wordplay is formed in Ampel, (2) certain situations, conditions, and settings to determine the circumstances in which the wordplay occurs, and (3) how users and non-users comprehend the wordplay. The result shows that Javanese wordplay in Ampel undergoes linguistic formation processes of prefixation and truncation that differ from most language games in other communities and societies. The findings show that this wordplay applies to particular circumstances and certain purposes of the users assigning whether outsiders should understand it or not.

**Keywords:** Javanese Wordplay, Language Game, Affixation, Truncation

### 1 INTRODUCTION

Wordplay, a part of language games, is a language phenomenon in a society that involves the functions of sociolinguistics and linguistics as the language system. Javanese, as example, is a native language with many sorts of language games, both those that have been researched and others that the community has yet to discover. Sadtono in Sherzer defined seven forms of Javanese language games with different independent processes: affixation and truncation [1]. Meanwhile, in the north of Surabaya, a Javanese wordplay combines the characteristics of the previously mentioned process types.

The above type of Javanese wordplay differs from other language games worldwide. Most experience reversion and infixation processes, as found in several previous studies in many language games. It can be seen in a study conducted by Conklin that focused on one of the most famous Tagalog wordplays in the form of a speech disguise known as *baliktad* [2]. The study described the wordplay process dealing with the phonological structure (phonemes) that is formed by rearrangement (reversal), affixation (infixation), and the combination of the two. However, the Tagalog speech disguise processes are uncertain because constant modifications are being made and developed in various localities, families, small groups, and individuals. This speech disguise is popular among all Tagalog speakers, so the basic forms of *baliktad* must be changed frequently, especially if it is to

retain any real sense of secret forms in communication. The next study is a wordplay in the Pitjantjatjara community of Areyonga in Central Australia carried out by Langlois [3]. The study analyzed a secret language of children and teenagers in the community called the Short-way Language, formed by the morphological (syllable clipping) and phonological (additional vowel) processes. The study also reported language games to differentiate speakers and their peers from others in which a language becomes an essential medium. Another study by Hovhannisyan also discovered wordplay in Armenian language games [4]. The study raised an Armenian speech disguise named the Bird Talk, which is based on normal Armenian speech but consists of infixation. The speech disguise is not spoken by a particular social or age group because the age of the speakers ranges from schoolchildren to the elder, who are mostly illiterate. It also constitutes an essential part of the oral culture in this rural community which aims to conceal a conversation from outsiders. On the other hand, apart from changing the language form to hide implied meanings, language games also focus on changing meanings. This type of language game can be seen in a study by Setiawan and Leliana which raised vowel plays in the form of reduplication in Javanese [5]. Unlike other studies in which the meaning of modified words remains the same but is hidden, this study identifies various forms of reduplication in Javanese to give different meanings from the basic form.

Many studies have uncovered various forms of language games and their functions in society worldwide. They have different linguistic formations but are dominated by the reversion and infixation processes. Besides, those language games rarely combine two or more processes simultaneously because they mainly apply one process independently. The previous studies also did not intensely examine the comprehension and attitudes of the language users who use and do not use the language games formed in their society. Accordingly, this research will analyze a Javanese wordplay in northern Surabaya, especially in the Ampel region, which is simultaneously undergoing the processes of affixation in the form of an additional prefix and truncation in the form of syllable clipping. This study aims to uncover another form of language game that has existed in society and to indicate that language users constantly carry out the phenomenon of language games' creation. Furthermore, the comprehension, circumstances, and attitudes of the wordplay users will also be examined, as they have not been well defined in prior research on other language games.

### 1.1 *Ludling*

When a speaker in a conversation tries to hide the identification and interpretation of what they say, they may change the linguistic structure of their language. This method of concealment is called speech disguise [2]. Borowsky also stated that speech disguise is concerned with secrecy as the secret language involves a conscious but systematic distortion of words, creating a 'code' that is easy to use by those who know it but not apparent to those outside the group [6]. Speech disguise, secret language, and other terms related to such behavior deal with how a language is manipulated. Bagemihl in Goldsmith stated that definitions of language games have focused on the sociolinguistic functions expressed by their various names in descriptive literature: language game, secret language, speech disguise, word game, wordplay, code language, argot, etc. Such a language type is used to disguise the identity of its users and facilitate personal communication between them or to serve as a challenging and fun trail of linguistic creativity [7]. However, there has been a general hesitation to incorporate this language behavior into common linguistic theories because of the two internal factors of the data itself: (1) language game operations are superficially very different from ordinary language processes; and (2) language games are alternative linguistic systems which relatively have limited sociolinguistic functions, small speaker populations, and uncertain acquisition processes. Nevertheless, significant advances in classifying these alternative languages have indicated that they have a particular type of linguistic and structural manipulation.



## 1.2 Affixation

Ludling is a language in which the morphological system is limited to one or more operations taken from affixation, reversion, template, and replacement. In general, the process of infixation is the most commonly used in language games. However, other affixation processes in the form of adding prefixes and suffixes also occur in modifying language games. Affixation in ludling is limited to one or at most several lexical items. Besides, the addition of affixes used for morphological characteristics tends to be semantically empty.

## 1.3 Truncation

Nelson (2003) suggested, in the Asymmetric Anchoring theory, that one of the main findings of prosodic morphology is the necessity to refer to edges and stressed syllables to explain reduplication, truncation, and affixation operations [8]. The truncation process occurs in some language games. However, they are very infrequent compared to reversing and infixing games, as in the wordplay of Pitjantjatjara teenagers called the Short-way Language, which cuts the left side to maintain the right side (Langlois 2006). According to Beckman in Nelson, in the context of the stressed syllable, the motivation for left-edge bias is assumed to descend naturally, as stated in the Positional Faithfulness theory [8]. Thus, a proposed asymmetry perception underlies the left-edge bias motivation and contradicts the common assumption that morpheme associations of reduplication or truncation can apply equally to the left or right edge. Although many examples showing a balance of left and right edges indicate symmetry in morpheme associations, they are proven superficial because cross-language studies of right-edge cases frequently reveal hidden dependencies.

## 2 METHOD

This study applies a qualitative method, an approach to explore and understand the attitude of individuals or groups to analyze the phenomenon of language games in their society. The research process involved predetermined questions and procedures with data collecting in a participant setting and data analysis constructed inductively. This research method develops a complex picture of a problem or issue under the study, including reporting multiple perspectives and identifying many factors in a situation. The subjects in this study were the wordplay users, primarily adults and elderly with the age range of 40–70 years, and non-users, mostly teenagers and several adults. The selection of the research subjects as informants was based on several predetermined criteria: the users who actively use the wordplay in daily communication and non-users who have grown up and lived in the setting where the wordplay is created and used. The data collecting was conducted in Ampel sub-district and an informant's house in the Wonokusumo sub-district – both in Semampir district, north of Surabaya. With the concept of narrative inquiry, this study applied data-collecting techniques in the form of interviews and observations. The informants were asked directly in the recorded interview process to be interspersed with discussions that could support information acquisition. Besides, observations were also carried out for two weeks to conclude the pattern of wordplay usage in daily oral communication. Furthermore, the classification process and narrative analysis described the collected data in the form of the informants' answers, the discussion results, and real examples of wordplay usage in daily conversation.

## 3 RESULT

This wordplay does not have an official name, but many people call it *walikan*, which means “the opposite form”. It is in contrast to the fact that the wordplay itself does not even reverse

any component of a phoneme or syllable in words. However, the term *walikan* is merely used as a tag even though in practice it is not following the meaning of the term itself. It is because when people in this community hear the term *walikan*, they will immediately refer to this wordplay.

### 3.1 *The emergence of the wordplay*

Almost all the wordplay users were born and raised in the Ampel region, north of Surabaya. Users who are currently 40–70 years old have heard this wordplay since they were teenagers. One of the informants, who is 69 years old, stated that she witnessed the community in Ampel, especially Arabians and Javanese teenagers, starting to use this wordplay in the 1970s. Thus, it is considered that the creation of this wordplay took place at that time. The wordplay has spread orally and has already occurred in the community in Ampel. It is one of the facts that people in Ampel are famous for creating language games in their society for several purposes. However, many people claim that the pioneers of this wordplay were Arabians – Arabians, Javanese, and Madurese dominate the Ampel region. Besides, the Arabians in Ampel have also been known to actively create language games that were initially understood by their group only, either from Arabic and the creation of new words whose pronunciation is similar to the Arabic accent or a modification of the Javanese language. One language game that occurs in Javanese is the one we are discussing in this study, or what some people call *walikan*. Arabians used this wordplay for jokes and to disguise the ridicule given to others so that they could freely say what they wanted but were not easily understood by others outside the group. Eventually, the wordplay was often heard and understood by Javanese teenagers and then used widely by them. As the wordplay is formed from Javanese words, the teenagers could easily identify the real words behind their modification. Consequently, Javanese teenagers also became the pioneers of the wordplay because they led to its increasingly widespread use among the other Javanese in Ampel.

### 3.2 *The wordplay formation*

The main process in this wordplay is to add the prefix *hu-* and do a clipping in a word to merely use the first syllable, followed by the first consonant in the next syllable. The use of this prefix among other forms of possible created prefixes is because *hu-* is considered the most suitable and comfortable to be connected with any form of pronunciation in Javanese words. In addition, this wordplay is merely used orally in which users do not use it in letters, online chats in social applications, or other forms of written communication.

This wordplay merely occurs in rough Javanese (*Ngoko*) and mostly in words with two syllables. Besides, the names of people and places are not included and cannot be modified. If there are words consisting of only one syllable, they are generally not modified. However, for words whose pronunciation has an additional phoneme [ə] at the beginning they can be modified by taking the additional phoneme as the first syllable. This kind of phoneme is just an affix to the Javanese accent.

If a word consists of more than two syllables, then it is not modified and is still clearly stated. However, some people are heard to have modified words with this characteristic by taking the first two syllables or the first and last syllables.

### 3.3 *The wordplay usage*

This wordplay occurs everywhere and is often used by users with their family, neighbors, and friends who are already close to each other. People who are not from the north of Surabaya, especially the Ampel region, have never heard this language game and ultimately do not understand it, except for those who have family, friends, or relatives from this region. The wordplay is used without any time specification. The users have no particular marker or

Table 1. Examples of modified words in the wordplay.

Real word	Modified word	Meaning
aku	huak	I (me)
gula	hugul	sugar
kopi	hukop	coffee
klambi	huklam	clothe
nangis	hunang	cry
lunga	hulung	go
nyambut	hunyam	work
tuku	hutuk	buy
ganteng	hugan	handsome
sugih	husug	rich
lara	hular	ill
males	humal	lazy
mari	humar	already
Repeated words		
arek-arek	huar-huar	kids
mlaku-mlaku	humlak-humlak	walking
rasan-rasan	huras-huras	backbiting
mangan-mangan	humang-humang	eating
tura-turu	hutar-hutur	sleeping

Table 2. Examples of modified words in the wordplay.

Real word	Pronunciation	Modified word	Meaning
teh	eteh/ətɛh/	huet	tea
mi	emi/əmi/	huem	noodle

Table 3. Examples of modified words in the wordplay.

Real word	Modified word	Meaning
nelangsa	hunelang	sad
gawekna	hugana	Make it!

indication before applying the wordplay. However, it happens under certain circumstances and purposes:

*Spontaneous usage and the outsiders should not know*

- In an urgency, such as informing secrets or important privacy that must be conveyed immediately in front of many people;
- When backbiting or talking bad about someone else;
- To ridicule other people;
- To talk about inappropriate and taboo things.

*Planned usage and the outsiders may know*

- To shorten the speech even though the modified words still consist of two syllables or more;

- To create a better atmosphere when gathering, chatting, and talking casually with people so that communication will be more fun and intimate;
- For joking.

Table 4. Utterances recorded during observation.

Modified utterance	Base utterance	Translation
Sus, pasien wis <i>huwar</i> ? - <i>Hudur</i> , sik <i>hular</i> .	Sus, pasien wis <i>waras</i> ? - <i>Durung</i> , sik <i>lara</i> .	Sus, has the patient recovered? - Not yet, still ill.
Kon gak <i>humang</i> , ta? - <i>Huak</i> sik <i>huwar</i> .	Kon gak <i>mangan</i> ta? - <i>Aku</i> sik <i>wareg</i> .	Don't you eat? - I'm still full.
Cak Lan <i>huan</i> , ta? - <i>Huan</i> , tapi wonge sik <i>hatur</i> .	Cak Lan <i>ana</i> , ta? - <i>Ana</i> , tapi wonge sik <i>туру</i> .	Is Cak Lan there? - Yes, but he's still sleeping.
Lek gak <i>hunyam</i> , <i>husid</i> gak <i>humang</i> <i>huak</i> .	Lek gak <i>nyambut</i> , <i>sido</i> gak <i>mangan aku</i> .	If I don't work, I won't eat.
<i>Huak hudur hudu hudhu</i> .	<i>Aku durung duwe dhuwit</i> .	I don't have the money yet.
<i>Humar hutuk hugul</i> , ta?	<i>Mari tuku gula</i> , ta?	Have you bought sugar?
<i>Huak hugana huet</i> .	<i>Aku gawekna teh</i> .	Make me tea.
<i>Huar'e hunang</i> .	<i>Arek'e nangis</i> .	The kid is crying.
Kon iku <i>humal!</i> <i>Hutanga</i> , aja <i>hutar-</i> <i>hatur</i> ae!	Kon iku <i>males!</i> <i>Tangia</i> , aja <i>tura-</i> <i>туру</i> ae!	You're lazy! Wake up, don't just sleep!
Bu, <i>husemku huen</i> ?	Bu, <i>sempakku endi</i> ?	Mom, where is my underwear?

### 3.4 The wordplay user

As ludling is obtained only by being exposed to and engaged in communication, most people who were born and have grown up in Ampel become familiar with and get used to this wordplay. Those who are socially active and often communicate with many people will be automatically involved to use the wordplay. On the other hand, people who have lived in Ampel for many years but rarely communicate and socialize with others will find it difficult to understand the meaning behind the wordplay, as they hear it a few times. Those people are also based on a sense of disinterest or the initial notion that tends to be negative towards the wordplay, as they decide not to become users of the wordplay.

In general, people's level of understanding of the Javanese wordplay in Ampel is divided into three stages:

- 1) People immediately understand just by hearing it a few times because they always take the initiative to match the first syllables with the original words in Javanese until they find out. Their first perceptions were interested, challenged, and compelled to respond if other people talked to them using this wordplay.
- 2) People have to initially inquire about the original form of the words before they can fully understand the modification. Their first perception tended to be curious.
- 3) People have no idea about the wordplay at all. Their first perception was either annoyed that they prefer light and clear communication without being modified in any way or that they completely do not care because they are simply not interested.

In practice, the users select the interlocutor by observing whether someone will respond while spoken to using this wordplay. Suppose they respond by expressing some modifications of the words according to the wordplay, or at least understand and can respond to the conversation relevantly using the ordinary language style. In that case, they can be invited to communicate using this wordplay henceforward. On the other hand, if they do not respond because they do not understand and do not know what to answer, or even show negative

reactions such as being upset or angry, they will not be invited to communicate using this wordplay anymore. The users will talk to these people in the common language style.

In addition, the users of the Javanese wordplay in Ampel are divided into two types:

- *Active user*  
These people actively initiate conversations using the wordplay and always respond if others invite them to communicate using the wordplay. They frequently ask if there are complex word modifications to understand.
- *Passive user*  
These people never start a conversation using wordplay. If others talk to them with this wordplay, they will respond. They also rarely ask if there are word modifications they do not understand because they tend to think this wordplay is not necessary.

Furthermore, the users can distinguish the same modifications of different words in the wordplay because they have become accustomed to and explored its use in daily communication. Besides, context becomes a differentiator in the circumstances of this wordplay. With contextual information, listeners can identify the intended meaning. The users must know the topic or context of something being discussed when using this wordplay to decide what words are formed from the modifications.

Table 5. Examples of the same modification in different words in the wordplay.

Modified word		Real word	Meaning
huwar	/huw <sub>A</sub> r/	waras	recovered
huwar		wareg	full
hudu	/hudu/	durung	not yet
huduw		duwe	have
hudhu		dhuwit	money

#### 4 DISCUSSION

According to Borowsky, the infrequency of truncation, compared to the more common reversing and infixing games in wordplay, is that right edge truncation is less effective as a disguise because many words can be recognized before the end of the word [6]. On the other hand, cutting the left edge makes it very difficult to understand the term, because the initial material is completely lost and unpredictable. However, assuming the processing proceeds from left to right, then the left edge of a word is more important than the right edge for lexical retrieval. Thus, the truncation pattern in language games preferentially targets the right edge rather than the left edge [8].

In one of the Javanese language games, every syllable of every word except the first one is deleted. Then, every output syllable must be closed; it is completed by maintaining the initial consonant of the second syllable of the source word. The rules of the wordplay process are as follows:

$$\begin{aligned} \#C1V1 - C2V2C3 \dots \# &\rightarrow \#C1V1C2 \dots \# \\ \#C1V1C2 - C3V2C4 \dots \# &\rightarrow \#C1V1C2 \dots \# \end{aligned}$$

Therefore, the Javanese wordplay characteristic in Ampel is similar to the linguistic pattern above.

The wordplay does not take the last syllable because the users can simply connect with the first syllable where the actual word behind the modification can be more easily guessed. This wordplay also merely takes the initial syllable so that the outsiders will not easily understand when all parts of the word are not expressed.

Table 6. The process of truncation.

Source word	Truncated word	Meaning
gula/gulɔ/	gul... /gul/	sugar
kopi/kɔpi/	kop... /kɔp/	coffee
turu/turu/	tur... /tur/	sleep
sugih/soge:/	sug... /sog/	rich
ganteng/gʌntɔŋ/	gan... /gʌn/	handsome
pinter/pintər/	pin... /pin/	smart

Table 7. The process of truncation.

Affixation	Modified word
hu + gul ...	hugul/hugul/
hu + kop ...	hukop/hukɔp/
hu + tur ...	hukur/hukur/
hu + sug ...	husug/husog/
hu + gan ...	hugan/hugʌn/
hu + pin ...	hupin/hupin/

After experiencing the truncation or syllable clipping process, the output syllables later apply an affixation process by adding the *hu-* prefix. Ludling or language games engage in a morphological process in the form of affixation, where in this case, the wordplay gets an additional prefix. The addition of an affix used for morphological characteristics tends to be semantically empty so that the prefix *hu-* in this wordplay does not have any meaning, other than as an indication that Javanese words are being manipulated in particular circumstances.

## 5 CONCLUSION

Wordplay on Javanese words found in the Ampel region, north of Surabaya, has different characteristics from most language games with the process of reversing and infixing. Although it has no reversion process at all, this wordplay is strangely called *walikan* by some people in the community, which means a reversal. Meanwhile, the wordplay itself simultaneously applies the process of affixation in the form of an additional prefix and truncation in the form of syllable clipping. Modifications to the words by the processes mentioned are for the users' particular purposes, especially to cover up the true meaning of what they are saying. However, just like the other language games, this Javanese wordplay is a piece of evidence that people have the ability and tendency to modify the linguistic system of their ordinary language. Therefore, it is highly recommended for further research to raise and discuss other language games in society to support the notion that linguistic alternations and modifications are forms of human creativity in their native language.

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## Translation procedures of CSIs in Indonesian version of *Legend of the Phoenix*

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**ABSTRACT:** The concept of culture is crucial but problematic in translation studies. Therefore, an analysis on culture-related terms and objects can be conducted to determine how translators approach the text. This paper examines culture-specific items (CSIs) in the android game *Legend of Phoenix* and identifies what kinds of translation procedures are used in their Indonesian version. The CSIs in question are limited only to the study of proper names (person's name) and common expressions (food and drink) used in the game. The study compares CSIs in both the source text (English version) and the target text (Indonesian version) and employs translation procedures by Davis. The data analysis results reveal that preservation is applied when dealing with proper names translation, while a combination of Preservation, Transformation, and Localization is mostly used in translating common expressions (food and drink) cases. Transformation, Localization, Addition, and Creation procedures, in particular, make the translated text awkward as they alter and move away from the original CSIs too much.

### 1 INTRODUCTION

*Legend of the Phoenix* is a mobile game developed by Modo Game, a part of Modo Global, and released for Android and IOS. The global (English) version was released in 2020 and has been downloaded by more than 5 million people. This mobile game use phoenix totem that is one of the symbols representing unique oriental feature of China (Li & Liu 2013). In this game, the player will take the role of a young woman who was betrayed by his spouse, the Crown Prince, and died due to poisoned wine. She then gets the chance to be reborn and take revenge on those who have wronged her in her previous life. *Legend of the Phoenix*, commonly abbreviated as *LoP*, follows her journey as she works her way up to the hierarchy in the Imperial Place, starting from a lowly maid to a respected Empress. The gameplay revolves around collecting allies (known as Partners in the game) and love interests (Confidants) while accumulating power and fighting enemies.

Like most *otome* games—games created for female players (Tanikawa & Asahi 2013)—*LoP* offers attractive graphs and male leads. This point, in addition to the interactive storyline, quests, and events, makes the game one of the most popular in terms of the number of players worldwide. However, with the increased popularity, players from all over the world are demanding a localized version of the game. Although *LoP* is already available in the global (English) version, the localized one will help players who are not fluent in the language. Thus, to comply with the demand, *LoP* has recently released versions in several local languages such as Korean, Chinese, Thai, Deutsch, Español, Français, Português, and Indonesian.



Nevertheless, limited research has been conducted on games and the gaming industry. Issues such as game localization, design, target, genre, and character all remain vast uncharted areas in academic research. Therefore, this paper aims to explore translation procedures adapted to localizing the *Legend of the Phoenix* game into the Indonesian version. The focus will be on the procedures applied to translating the Culture Specific Items, specifically on proper names (person's name) and common expressions (food and drink) that appear in the game.

### 1.1 *Culture-specific items*

According to Aixela (1996:14), Culture Specific Items (CSIs) can be defined as “elements of the text that are connected to certain concepts in the foreign culture (history, art, literature) which might be unknown to the readers” of the target text. Languages encompass various CSIs, yet, it is difficult to determine which part can be categorized as culture-specific in a text. Aixela (1996) generally divides culture-specific items into two basic categories—proper names and common expressions. First, Aixela (1996) defines proper names to include conventional names, which means names that do not have any meaning in themselves, and names that are loaded with particular historical and cultural associations. Meanwhile, Howard (2009 in Brasiene 2013) sees proper names as a particular name or word used to refer to “... specific person, place, or thing, and is usually capitalized”. Proper names, therefore, according to Howard (2009 in Brasiene 2013), can be further categorized into eight sub-categories: 1) part of a person's name; 2) given or pet names of animals; 3) geographical and celestial names; 4) monuments, buildings, meeting; 5) historical events, documents, laws, and periods; 6) groups and languages; 7) religions, deities, scriptures; and 8) awards, vehicles, vehicle models, brand names.

Second, common expressions can be defined as a group of items not included in the scope of proper names. Aixela (1996) mentions “objects, institutions, habits, and opinions restricted to each culture” to belong to the category of the common expression. Brasiene (2013) thinks that CSIs of this category pose more challenges in translation as it is hard to identify them in the first place and much harder to convey their meaning in the target language. Yet, unlike proper names, there has to be a detailed classification of common expressions. Hence, Brasiene (2013) sums up all the items in common expressions into seven sub-categories based on his understanding of other categorizations by other scholars. Those sub-categories are as follows: 1) food and drinks; 2) pursuits; 3) units of measurement and currencies; 4) clothing terms; 5) employment terms; 6) housing terms; and 7) military terms. This paper limits the study of CSIs' proper names' first sub-category (part of a person's name) and common expressions' first sub-category (food and drink).

### 1.2 *Translation procedures*

While translating CSIs, translators will have to decide whether to preserve the source text as much as possible so that it can maintain its original nuances and results in giving exotic or even unfamiliar vibes to the target audience or adapting and modifying the source text thoroughly as to produce a new text that is familiar and normal to the target audience. These two are like two opposing poles and have been defined in the translation ideologies of foreignization and domestication by Venuti (1995). Domestication refers to changing foreign cultural terms and references into local ones so that the target audience will find the text familiar and easy to understand. On the other hand, foreignization keeps the source text unchanged; thus, the target audience may recognize the text as a translation and come into contact with foreign cultural terms and references. Translators will usually lean toward one of those ideologies before deciding on the translation procedures they will use in their translation.

Newmark (1988:81) describes translation procedures as methods to translate the smaller unit of language from the source language to the target language. While there are various

translation procedures, this study will specifically use the translation procedures introduced by Davies (2003). He introduced seven procedures (often known as translation strategies) that can be applied to translating CSIs.

- Preservation  
This procedure implies maintaining the cultural references in the source text, as there is no close equivalent in the target culture.
- Addition  
In this one, the translator usually keeps the original terms or references and supplements them with additional details that are deemed necessary.
- Omission  
As the name suggests, this procedure removes problematic CSIs altogether, so no trace of them can be found in the translation.
- Globalization  
The procedure indicates the action of substituting the CSIs with ones that are more neutral or general. Thus, audiences from a broader range of cultural backgrounds can easily understand the translation.
- Localization  
Unlike globalization, which tries to keep the translation “culture-free”, the localization procedure includes using references or finding the most closely related terms in the target audience’s culture to replace the original CSIs.
- Transformations  
This procedure will alter and distort the original CSIs into ones that are more culture-friendly to the target audience. It will depend on the translator’s assessment of the target audience’s flexibility, tolerance, and willingness to wrestle with possible foreign materials.
- Creation  
It means that translators create an entirely new replacement for the original CSIs. The new term or reference cannot be present in the original text.

Studies related to translation studies have been done previously by many scholars. Epstein (2012) analyzes problems in translating expressive language in children’s literature and how to solve them. Then, Japhari (2019) also identifies translation procedures used for *Authentication of Hadith: Redefining the criteria* book. The topic of foreignization and domestication of Oscar Wilde’s novel entitled *The Picture of Dorian Gray* has also been discussed by Schmidt (2013). So far, studies related to pop culture in translation studies are limited to books and movies. There has been no research yet about game translation. Therefore, this study attempts to fill the gap by exploring CSIs in the android game *Legend of Phoenix* and determining the translation procedures in the Indonesian version

## 2 METHODS

This study compares the visual and textual analysis of the English and Indonesian versions of the android game *Legend of The Phoenix*. First, it aims to identify the CSIs in *Legend of the Phoenix* and the types of translation procedures applied in the Indonesian version. The data of this study is Culture Specific Items found in *LoP*. First, the game is examined thoroughly to extract CSIs that have been grouped according to categorization by Aixela (1996) and Brasiene (2013). They will be limited to CSIs of proper names (person’s name) and common expressions (food and drink). After listing them all down, the CSIs from the source and target texts are compared to reveal the translation procedures used in the Indonesian version of *LoP*. The translation procedures, in this case, are determined according to the classifications of Davies. The result of this study will be discussed further in the section below.

### 3 RESULTS AND DISCUSSION

#### 3.1 *Translating proper names*

Your name determines who you are and where you come from. By looking at the characters' names, one can guess the story's setting in narratives. If a target text decides to use the original names without any modifications, it implies that the setting of the text is in a foreign place or culture. However, when translators decide to change the original names into domestic ones, it means that the story's background is the target culture. Keeping original (foreign) names means that the setting is foreign as foreign names reveal the existence of "cultural other"; while modifying into domestic names shows that the story is happening in the target's own culture (Sung et al. 2016). It is all possible since names have an identifying function, such as giving information on gender, nationality, and even characteristics, in addition to containing cultural or historical references.

As mentioned above, the proper names category is divided into eight sub-categories. This study will particularly revolve around the first category of part of a person's name, which commonly includes first and last name. Characters in Legend of the Phoenix can be divided into two categories—allies and enemies. Allies consist of Confidants and Partners that players can get through the main story, travels, letters, recruitment, achievements, VIP subscription, and events. Confidants are characters who function as love interests for the players. They don't require level upgrades with EXP but need to raise their Intimacy level to provide attribute bonuses.

On the other hand, partners are characters who assist players in increasing their fight power. Players must level up their partners using EXP as they play crucial roles in game components such as Debate, Hunting, Field, and Momentum Battles. Most confidants and partners in Legend of the Phoenix possess personal and family names, as seen in Figures 1 to 4. Nevertheless, a few, like Prince Cheng, Duke Xun, and Eunuch Gui (Figures 3 and 4)



Figure 1. Confidants in *LoP* (English).



Figure 2. Confidants in *LoP* (Indonesian).



Figure 3. Partners in *LoP* (English).



Figure 4. Partners in *LoP* (Indonesian).

go by their titles. In such cases, the analysis will be focused on the part of their name that is available, whether it's first or last name.

Proper names translation is a tricky deal. A translator will have to decide whether to preserve the original name and its nuances or to change it into a new one that is more acceptable for the new target audience. The discussion on the translation of proper names deserves a more detailed analysis than provided here. Therefore, this paper will only include a few instances of proper names translation relevant to the case.

Table 1 shows samples of names translated in *Legend of the Phoenix*. The list contains Confidants' names in both English and Indonesian versions and the translation procedures adapted during the game localization.

Table 1. List of confidant's names.

Name		
English Version	Indonesian Version	Translation procedures
Yin Zhen	Yin Zhen	Preservation
Fu Heng	Fu Heng	Preservation
Pan An	Pan An	Preservation
Zhou Xiaoshi	Zhou Xiaoshi	Preservation
Wei Jie	Wei Jie	Preservation
Wei Xiaobao	Wei Xiaobao	Preservation
Ji Kang	Ji Kang	Preservation
Song Wengong	Song Wengong	Preservation
Yin Zhi	Yin Zhi	Preservation
Murong Chong	Murong Chong	Preservation
Yin Qi	Yin Qi	Preservation
Lu Yu	Lu Yu	Preservation

As shown in Table 1, there is no difference between the confidants' names in the English and Indonesian versions. Yin Zhen stays as Yin Zhen in both versions. Zhou Xiaoshi is also still Zhou Xiaoshi. The same applies to all confidants and partners in *Legend of the Phoenix*. They all retain their original name even in translation. Also, preservation seems to be the only translation procedure in localizing proper names (part of characters' names) in the Indonesian version of *LoP*. By using preservation, the translator shows the players that the game takes place in China, as indicated by the name of all characters that remain unchanged even in the Indonesian version. As such, players can expect to get acquainted with Chinese culture and CSIs throughout the game.

### 3.2 Translating food and drinks

One of the tasks in *Legend of the Phoenix* is cooking in the Imperial Kitchen (Figure 5). Access to Imperial Kitchen will be unlocked once the players reach Clan Lady V level. Players are supposed to raise their Cooking Level and gain Cooking Experience by making various dishes and claiming recipe achievements on the top left of the screen.



Figure 5. Imperial Kitchen in LoP (English).

In the English version, there are four types of recipe achievements that need to be completed by the players. There are Home Cooking, Special, Kung Fu, and Imperial recipes. Even though the Indonesian version also has four recipe achievements, the translation is quite different. Home Cooking and Imperial are aptly translated into *Masakan Rumahan* and *Masakan Kekaisaran* in Bahasa Indonesia. Yet the problem lies within the other two translations. Special is translated in *Resep Pribadi*, whereas Kung Fu becomes *Masakan Koki* in Bahasa Indonesia. The recipes for each section remain more or less the same. However, players of LoP who have not played the original English version (Figure 6) may get confused when opening the Recipe Achievements (Figure 7) in the Indonesian version due to the difference in translation.

Each recipe achievement contains recipes for different dishes. Players can click on the recipe if they want to learn more about the ingredients and the explanation for the dishes. Unfortunately, as seen in Figures 8 and 9, the Indonesian translation for the explanation for



Figure 6. Recipe Achievements in *LoP* (English).



Figure 7. Recipe Achievements in *LoP* (Indonesian).



Figure 8. The Explanation for Dishes in *LoP* (English).



Figure 9. The Explanation for Dishes in *LoP* (Indonesian).

dishes in LoP appears to be quite different from the original and a bit off. The translator has transformed the details from the source text and created bits of information that do not exist in the original, such as the part about nasi or rice and the dish is sweet, not oily, and good for the heart.

Out of 23 samples in Table 2, six of them use Transformation, ten Preservation, four Localization, two Addition, and one Creation. Nothing changes from the Preservation groups save for the language change from English to Bahasa Indonesia. For instance, Vegetable Venison in the English version becomes *Daging Rusa Sayur* in the Indonesian version. The same things happen to Assorted Stew-*Aneka Rebusan*, Boiled Cabbage-*Kubis Rebus*, and also Mooncake-*Kue Bulan*, to name a few. Then, the second procedure with the most occurrences, Transformation, shows dishes modified into something different from the original. Shrimp Meat Pie for one suddenly becomes *Perkedel Udang dan Daging*. Those two don't really share any similarities because pie and *perkedel* are not the same. It may be more appropriate to translate Shrimp Meat Pie into *Pia Udang dan Daging*. Braised Beef and Braised Venison probably also require the same treatment since the Braised and *Angsio* cooking method (and consequently its result) are different.

Table 2. List of dishes.

Dishes		
English Version	Indonesian Version	Translation procedures
Aromatic Rabbit	Daging Kelinci Sedap	Transformation
Assorted Stew	Aneka Rebusan	Preservation
Bamboo Venison	Daging Rusa Masak Rebung	Localization
Beef with Tomato	Daging Sapi Tim Tomat	Localization
Boiled Cabbage	Kubis Rebus	Preservation
Braised Beef	Angsio Daging Sapi	Transformation
Braised Venison	Angsio Daging Rusa	Transformation
Duck Soup	Sup Bebek Jamur	Addition
Fairy Pot	Pot Dewa	Transformation
Grilled Rabbit	Kelinci Panggang	Preservation
Kirin Noodle	Mie Angsio Kirin	Transformation
Kung Pao Beef	Daging Sapi Kung Pao	Preservation
Lamb in Fish	Daging Domba dalam Perut Ikan	Preservation
Mooncake	Kue Bulan	Preservation
Riceball Soup	Sup Ronde	Localization
Roasted Meat Zongzi	Bakcang Daging	Localization
Seasoned Beef	Daging Sapi Bumbu	Preservation
Shrimp Meat Pie	Perkedel Udang dan Daging	Transformation
Soybean Soup	Sup Kacang Kedelai	Preservation
Surplus Fish	Kelimpahan Hidup	Creation
Tomato Soup	Sup Tomat Daging	Addition
Vegetable Venison	Daging Rusa Sayur	Preservation

The four instances of Localization in translating the dishes look a good fit. Although they may need to be improved, Roasted Meat Zongzi, for instance, can be called *Bakcang Daging Panggang*. Also, Rice Ball Soup, is better translated simply as *Ronde* or *Wedang Ronde*. Then, additionally, the translator adds a seemingly unnecessary word to the translation. Duck Soup becomes *Sup Bebek Jamur*, although the source text does not have any mention of *jamur* (mushroom). This also happens to Tomato Soup which is translated to *Sup Tomat Daging*. The translation gets additional '*daging* (beef)' when the original only has tomato

soup in the recipe. Finally, Creation only has one occurrence in the translation of Surplus Fish into *Kelimpahan Hidup*. There is no clear connection between the two and will confuse the players upon encountering such a recipe in the Indonesian version. Overall, it can be concluded that the translation of the common expressions (food and drinks) category in the Indonesian version of *LoP* is mostly dominated by preservation and to a lesser extent, used Localization, Transformation, Addition, and Creation. Some parts of translation look inappropriate and need adjustments, so it does not confuse the Indonesian players.

#### 4 CONCLUSION

The translation procedures used in localizing the Indonesian version of *Legend of the Phoenix* are dominated by preservation in the proper names category and a combination of Preservation, Transformation, Localization, Addition, and Creation in the category of the common expression. The translator wants to keep the source text and its original CSIs as much as possible by adapting those translation procedures. However, the Indonesian translation quality itself leaves much to be desired. Based on the collected data, it is clear that the translator needs to improve his/her translation or that the developer needs to find a new translator for the Indonesian version of *Legend of the Phoenix* game. Even though it is good to use the Preservation procedure to maintain the characters' original names, the same thing does not apply to translating common expressions (food) in the game. Transformation, Localization, Addition, and Creation procedures, in particular, make the translated text awkward as they alter and move away from the original CSIs too much.

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# The discourse of environment in Indonesian tourism website: A corpus-assisted study

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**ABSTRACT:** Despite massive discussion on rhetoric and persuasive strategies of environmental tourism promotion, the investigation of its discourse structure has yet to be found. This corpus-assisted study intends to figure out the macrostructure of the Indonesian tourism environmental discourse by compiling 132 articles or 72,204 tokens under the “destinations” page of Indonesia. Travel website and using Wmatrix5 and AntConc corpus tools to identify the Indonesian environmental discourse’s keywords, semantic tags, and themes. The analysis figured out that the lexeme “island” is the most frequent keyword used on the website, and nature-related terms are the significant themes comprising semantic tags of geographical terms (W3), judgment of appearance: positive (O4.2+), and sailing, swimming, etc. (M4). The concordance lines demonstrate that those themes embody Indonesian tourism as a site of positively evaluated nature and nature-based activities that invite readers to engage with the physical environment. The significant “keyness” value of geographical terms also frames Indonesia as a tropical and archipelago country, supported by collocations of geographical names like Morotai, Waigeo, Kera, Padar, Alor, Weh, and Mansuar. This paper concludes that the environmental discourse is embedded in the website to frame Indonesia as a home and storage of endangered biodiversity.

## 1 INTRODUCTION

Including and promoting environmental discourse in tourism websites is an ideologically motivated choice. The fact that Indonesia is an archipelago country has triggered the government to thoughtfully position tourism as an essential element to boost economic vibrancy. The tourism and creative economy ministry target 5% of the country’s gross domestic product (GDP) from the tourism sector (Kusubandio 2019). The promotion has been delivered massively to ease global readers’ access to information about Indonesia through social media, including the official tourism website. Social media is a site of power that intentionally naturalizes things and legitimizes the report (Svetanant 2009). Therefore, its existence in tourism promotion must affect readers’ assumptions, perspectives, and attitudes when visiting destinations.

Official tourism websites contain textual and visual semiotic strategies to engage readers with a country’s tourist attractions and authenticity, such as nature, culinary, culture, and heritage (de Bernardi 2019; Krisjanous 2016; Liasidou 2018; Uwaoma 2020). Though the official tourism website consists of rich visual communication modes, the textual strategies accessed through vocabularies must be addressed since they are the most apparent component in discourse analysis. Their existence in context provides various ideological meanings (van Dijk 1998). The lexical choice in tourism websites provides a global meaning or theme of a discourse or the macro discourse structure. From a socio-cognitive approach, macro discourse structure provides schemes that shape local coherence and microstructure

discourse. Thus, macro discourse structure is vital in representing general discourse knowledge to its readers (Abdel-Raheem 2021; van Dijk 1980).

The notion of the environment in tourism is often associated with nature-based activities and is sometimes called ecotourism. However, the inclusion of nature does not always parallel the purpose and principles of ecology, as proven in Fraser Islands (Mühlhäusler & Peace 2001). The linguistic choices like pronouns, metaphors, appraisal, and transitivity systems are used to separate human beings from ecology (Jaworska 2017; Mühlhäusler & Peace 2001; Wu 2018). Human beings are the subjects, and nature is the object being explored or exploited. In Indonesian tourism, the metaphor TROPICAL PARADISE is proven as a strategy to entail the country with natural beauty that invites global readers to conceptualize Indonesia as a tropical site (Jaworska 2017). Indonesian nature is also conceptualized as a person and entity with human abilities and senses, like dance, rage, run, seductive, and fondle (Krisnawati et al. 2021). The anthropocentric articulation of Indonesian nature is a reproduction of tourism discourse in general (Adu-Ampong 2016; Belhassen 2020; Jaworska 2017). Nature is accepted as an attractive element that results in people's happiness, satisfaction, and enjoyment when visiting a tourist destination.

Discourses refer to ways of representing the world, involving the process, relations, and structures of the material, mental, and social world (Fairclough 2003). Discourse is shaped by communicative events that have their purposes. It also reproduces a mental model that underlies social perspectives and beliefs. Thus, language choice in a text is motivated by its writer or speaker's ideology. A tourism website is believed to be a promotion site, so its discourse structure is constructed in a particular language that fulfills its purpose. In this sense, discourse is a social practice that construes the social world, identity, and relation (Fairclough 1995).

CDA is well-known for its three-dimensional discourse model: macro, meso, and micro. The microstructure is marked by linguistic evidence, whereas the mesostructured can be accessed from intertextuality and interdiscursivity across texts ((Fairclough 2003, 1995). From Fairclough's perspective, the more varied interdiscursivity in a discourse, the more social change is manifested in the discourse (Fairclough 1995). On the other hand, macro discourse structure unveils topics, global coherence, or knowledge and explains common ideological practices from a communicative event (van Dijk 1980).

While Fairclough emphasizes the connection between discourse and society, van Dijk discusses more on the cognition or social cognition that bridges ideology and discourse. As a form of discourse, topics influence readers' representation in constructing their knowledge, cognition, and experience of an event. That mental model constructs readers' cognition through information about such situations inferred from the general knowledge script (van Dijk 1998). Therefore, topics invite readers to process information from texts and construct their mental models from related events and experiences. Models have richer information than texts since readers can conclude relevant parts from other texts they read. Consequently, topics suggest to readers what are essential and not in a subjective mental model (van Dijk 2017).

Corpus linguistics (CL) is not an approach that determines the ideological interpretation of a discourse based on the statistics result. However, it helps researchers benefit from corpus tools to investigate how topics are used in a discourse context. The analysis of topics in context is a fundamental step in CDA aided with corpus study so that researchers can figure out how the compiled texts construe a global meaning or macro discourse structure of a corpus (Samaie & Malmir 2017). CL is an approach in CDA that enables researchers to examine big data of a corpus. CL is an empirical discipline that benefits software to 1) count the linguistic data faster and more accurate, 2) identify word list, 3) identify keywords by comparing two different corpora, 4) identify collocations or words that are likely to appear with the other words, and 5) present and choose information from corpus to ease the interpretation based on the repeated words or phrases (concordances) (Subtirelu & P. Baker 2018).

Researchers can take data from provided corpus like British National Corpus (BNC) and Corpus of Contemporary American English (COCA), or they can build their corpus by

compiling texts and analyzing them with software tools, like AntConc, SketchEngine, graphColl, Wmatrix, and Lancsbox. CL has benefited from lexical and syntactic data to observe language synchronically and diachronically. Furthermore, researchers also use CL as a method in CDA to figure out discourse structures in various genres (Baker 2006; Subtirelu & Baker 2018).

Concerning macro discourse structure, corpus linguistics provides tools to help researchers rely on empirical data that count linguistic data faster and more accurately and identify the most frequent words (Subtirelu & Baker 2018). For macro discourse structure, word frequency is adequate to figure out the discourse tendency and map discourse topics based on quantitative data comprising hundreds, thousands, or even millions of words. Word frequency has proven how news narrative discourse is tendentious to represent men and women, Muslim in Great Britain media, and collective intentionality through pronouns in government press releases in China genres (Baker 2006; Gu & Tipton 2020; Subtirelu & Baker 2018).

Besides word frequency, keywords are also essential tools in corpus linguistics to show words with higher or lower frequency in the target corpus relative to the referent corpus (Brezina 2018). The target corpus refers to the corpus with extracted words, while the referent corpus compares the target corpus. Keywords show the characteristics of a corpus and are widely spread in the corpus (Subtirelu & Baker 2018). The keyword comparison is automatically analyzed in the corpus tool proven by significance test or effect size.

The use of corpus linguistics to investigate tourism discourse has been found recently. CL offers to identify linguistic patterns on a broader text or external data representing a particular language variety (Subtirelu & Baker 2018; Zufferey 2020). CL has provided how metaphors in Europe, UK, and Pacific Asian websites are distinct in terms of their source and the target domain (Jaworska 2017). Using WMatrix 5 and AntConc, Jaworska figured out that the “faraway” corpus, referring to Pacific Asian countries, involved more metaphorical expressions comprising source domains of BODY, NATURAL PRECIOUS ELEMENT, COLOR, TASTE, and RELIGION. The combination of metaphorical expressions in the corpus creates a sensory image of the tourism site as an entity to consume.

Other than metaphor, adjectives also characterize tourism discourse in general. By providing data from COCA and BNC, Durán-Muñoz examined how adjectives in tourism, especially adventure tourism, significantly differ from general English (Durán-Muñoz 2019). Despite categorizing the evaluative and descriptive adjectives, the research focused on the lexico-semantic features of adjectives in tourism discourse. By including more than 1 million words from ADVENCOR corpus, the researcher also used TermoStat Web 3.0 to extract the part of speech of the corpus, concordance lines, related words, and morpho-syntactic patterns. To measure the keyness of the websites found in ADVENCOR, the researcher used COCA and BNC as the referent corpus and found that the superlative adjective has a higher keyness in the target corpus compared to the referent corpus. The statistical analysis figured out that adjectives used in the target corpus positively correlate with the referent corpus despite the temporal and geographical dimensions.

Besides metaphor, research on CL in tourism also investigated the vocabularies in Thailand’s sports tourism corpus. By involving 150 tourism news from different sources, Yotimart used AntWordProfiler to determine how the AWL (academic word list) is used in the corpus. The research found that 7.38% words in AWL to appear in the corpus. It signifies that sport vocabulary are specific, so students of sport tourism need to be exposed with specific vocabulary in teaching-learning situations (Yotimart 2021).

Further research on tourism promotional websites was conducted in Spanish autonomous communities in Spanish and English. Malenkina & Ivanov examined meta-discourse markers in the tourism branding (Malenkina & Ivanov 2018). The employment of hedges, boosters, attitude markers, self-mention, and engagement markers was employed in the seventeen websites as strategies to promote tourism resources, attractions, and unique selling points. The domination of boosters emphasized the service/ product described. The cultural influence of language affects the use of boosters and engagement markers as Spanish and

English societies have individualistic cultures, so the strategies to position tourists as unique and personalized contact are selected in the corpus.

Studies above have included different corpus tools to investigate tourism websites in international settings. Despite the thorough discussion of the persuasive strategies and specific linguistic units in tourism discourse, the studies mentioned above should have discussed the macro discourse structure of tourism websites in general. The discussion focused on the micro discourse in the form of metaphor, adjectives, vocabularies, and meta-discourse markers. Therefore, this paper aims to fill the gap by investigating the topics of environment that embody the Indonesian physical environment in general as an essential element in tourism promotion. This paper addresses these questions: 1) What environmental keywords are found on the Indonesian tourism website? 2) What are the collocates of environmental keywords in the corpus? and 3) How do the environmental keywords construct the macro discourse structure of the Indonesian tourism website?

## 2 METHODS

This critical discourse study posits discourse as a reproduction of ideology that underlies linguistic choices in tourism promotion. As proposed by van Dijk, cognition bridges ideology and discourse in a society (van Dijk 1998). Therefore, this research assumes that the macro discourse structure of the Indonesian environment is socially motivated by social beliefs about the role of the environment in the tourism sector. We selected the data from Indonesia. A travel website is one of the social media managed by the ministry of tourism and the creative economy of Indonesia. Under the “destination” page, we compiled 132 articles, or 72,204 tokens separated from six main areas: Java, Sumatera, Kalimantan, Sulawesi, Bali and Nusa Tenggara, and Papua. To proceed with the quantitative data, we used corpus linguistics (CL) to provide an overview of linguistic patterns and trends in a corpus of texts and to figure out the construction of the discourses associated with the environmental terms (Torkington et al. 2020).

The selected data were downloaded, cleaned, and transferred to .txt format and uploaded to <https://ucrel-wmatrix5.lancaster.ac.uk/>, an online corpus website developed by Paul Rayson from Lancaster University that provides the Constituent Likelihood Automatic Word-tagging System (CLAWS) and UCREL Semantic Analysis System (USAS) corpus annotation tools. The semantic tag of particular topics is indicated by different codes (Rayson 2009). For example, W3 refers to geographical terms, Z2 refers to geographical names, and L3 refers to plants. We also used another corpus tool, AntConc to find the keywords, collocation, and concordances related to Indonesian environmental discourse (Anthony 2021).

We used Brown corpus, a more general referent corpus, to be compared to the Indonesian tourism corpus, or called the target corpus. Brown corpus was first compiled by W.N. Francis and H. Kucera from Brown University. The Brown corpus consists of 500 samples of approximately 2000 words each. We included 15 categories of sample texts in genres, such as reportage, editorial, popular lore, and general fiction (Stefanowitsch 2020). Keywords show the characteristics of the target corpus and prove that the words are unique compared to the referent corpus. The comparison between referent and target corpus is proven quantitatively by the Likelihood value to result in the keywords that show the significance test or effect size; the more unique the words, the higher the likelihood value. Further, we also checked the collocations of environmental terms to help us detect the most significant relationships between the non-sequential word associations (Baker 2006).

Besides figuring out the most frequent keywords, we also observed the USAS tag to map the semantic domains that construct the Indonesian tourism website. In this paper, we included ten semantic domains and sorted them into the ones related to environmental discourse. The semantic tag was examined in concordance lines to find the context where the lexeme of the semantic tag was used. The context shown by the left and right words of the lexicon is essential to investigating how a lexeme is used contextually. CDA believes that

discourse is produced in socio-political contexts in which the texts are embedded (Reisigl 2017). The global meaning or theme of the discourse is the reproduction of ideology underlying the social cognition and beliefs about the world (van Dijk 1998).

### 3 RESULTS AND DISCUSSION

The Indonesian tourism website consists of two main pages: destination and attraction. The destination page is divided into six major areas: Java, Kalimantan, Sumatera, Bali and Nusa Tenggara, Sulawesi, and Papua. The number of articles is different from the geographical area. Kalimantan has a broader area, but is promoted only in 12 articles, less than Java which is elevated in 35 articles. However, this paper does not separate the analysis from its geographical area but positions the corpus to represent Indonesia in general.

Of the 72,204 tokens compiled from the Indonesian tourism website, AntConc found 985 keyword types and 35,726 tokens. We sorted ten environmental keywords of those keyword tokens, as shown in Table 1.

Table 1. List of fifteen environmental keywords.

Keyword	Rank	Freq Tar	Freq Ref	Likelihood
island	2	345	176	1289.66
park	13	161	94	578.275
beach	15	143	64	553.28
village	16	145	73	543.672
islands	20	117	31	507.536
sea	26	139	108	453.887
waterfall	38	59	2	313.191
mount	42	73	27	295.722
lake	50	76	56	252.868
beaches	59	54	14	235.134
area	71	126	331	209.235
mountain	75	57	33	205.184
diving	84	40	5	193.32
mangrove	85	34	0	190.472
coral	88	40	6	189.216

The first column refers to the environmental keywords, and the second column refers to the rank of the keywords that appear in the corpus decided by the “keyness” value, not word frequency. Since we sorted environmental keywords only, the rank order is not continuous from 1 to 10. The third column is the frequency of the keyword in the target corpus, while the next column is the word frequency in the referent corpus. The last column is the Likelihood value, which is all positive. The likelihood is also called the “keyness” of the target corpus. The likelihood value greater than 6.63 shows that the probability result or the difference between the two corpora to happen by chance is less than 1%. In other words, we can be 99% ( $p < 0.01$ ) sure that the result means something or that the keywords characterize the target corpus (Pojanapunya & Todd 2018).

The semantic comparison’s most significant difference (LL value 1289.66) is the lexeme “island” which is categorized in USAS tag W3 as representing the semantic field geographical term. Below are examples of concordance of the lexeme “island” in the data.

- 1) ... of *Bird’s Head Peninsula on Papua, the most eastern **island** of the Indonesian Archipelago, Raja Ampat or literally meaning...*

- 2) ... *He considered Alor as a world-class underwater paradise. The **island** of Alor itself is inhabited by several...*
- 3) ... *more detailed flight schedules. Overland An overland trip across the **Island** of Flores is possible but costly. It connects Labuan ...*

The concordance lines above show that the lexeme “island” appears after the adjective, determiner, and before the preposition of + geographical names. The pattern indicates that the lexeme “island” syntactically performs as the noun head modified by island names or geographical names. It is supported by collocates of the lexeme “island” as displayed in Table 2.

Table 2. List of collocates of lexeme “island”.

Rank	Collocate	USAS tag	FreqLR	Likelihood
1	Island	W3	64	79.976
2	Morotai	Z2	17	79.428
3	The	Z5	350	56.754
4	Waigeo	Z2	12	40.486
5	Kera	Z2	5	39.635
6	Padar	Z2	7	38.051
7	Of	Z5	173	31.175
8	Pengadaran	Z2	4	29.356
9	Apes	Z2	4	29.356
10	Alor	Z2	10	29.322
11	Timor	Z2	9	28.375
12	Weh	Z2	7	28.057
13	On	Z5	49	26.902
14	Tabailenge	Z2	5	26.655
15	Mansuar	Z2	6	25.648

The list above shows that the lexeme “island” occurs within three semantic tags: W3 (geographical terms), Z2 (geographical names), and Z5 (grammatical bins). First, the lexeme “island” is found near the other lexeme “island” whose frequency is 64 in the left and right context. Second, the lexeme “island” is likely to always occur with geographical or island names. The lexeme “apes” above is the translation of Pulau Kera, so we assumed that the keyword also belongs to geographical names. Third, the grammatical bin like *the*, *of*, and *on* characterize the definite noun phrase that shows a specific tourism destination.

As the main keyword found in the corpus, Indonesian islands are associated with “paradise” as shown in concordance 2) above. In line with Jaworska’s research, the concordance line above proves that as a tropical country, Indonesian tourism websites are richer in metaphor with the RELIGION domain than tourism websites in the UK and Europe. RELIGION refers to the nature of plenty and abundance (Jaworska 2017). The source domain PARADISE conceptualizes the underwater life of Alor Island. Alor underwater life consists of various types of coral reefs, walls and overhangs, fish, reef macro, piers, and caves. The destination also invites tourists to experience coral reef diving, muck diving, and house reef. It agrees with the keyword displayed in table 1 above that diving characterizes nature-based activities in Indonesian tourism.

#### 4 PHOTOGRAPHS AND FIGURES

Number figures consecutively in the order in which reference is made to them in the text, making no distinction between diagrams and photographs. Figures should fit within the column width of 90 mm (3.54”) or the type area width of 187 mm (7.36”).

Paste copies of figures, photographs, etc. at the required size onto the typescript where you want them to appear in the text. Make sure to place them sideways on a page. Figures, etc., should not be centered, but placed against the left margin. Leave about two lines of space between the actual text and the figure (including caption). Never place any text next to a figure. Leave this space blank. The most convenient place for placing figures is at the top or bottom of the page. Avoid placing text between figures, as readers might not notice the text. Line drawings (as well as photographic reproductions of these) should be in black (not gray) on white. Keep in mind that everything will be reduced to 75%. Therefore, 9 points should be the minimum size of the lettering. Lines should preferably be 0.2 mm (0.1") thick. Keep figures as simple as possible. Avoid excessive notes and designations.

The Indonesian tourism website also builds an image of a country with many conservation areas or national parks to protect nature. It is proven by the second most environmental keyword displayed in table 1, which indicates the overuse of the semantic domain geographical terms (Z3). Below are examples of concordance lines of the lexeme "park".

- 4) *Situated in the easternmost part of Java Island, Baluran National **Park** is a large area consisting of open savannahs where...*
- 5) *... long in these laid-back islands. Kepulauan Seribu's Marine National **Park** is the heart of this archipelago. The park consists...*
- 6) *... that rises 3,676 meters above sea level. Bromo Tengger Semeru National **Park** is the only conservation area in Indonesia that has ...*

Indonesia has established more than 54 national parks since 1980. Six have been recognized by the UNESCO world heritage sites (Pamungkas & Jones 2021). They are well-known as conservancy sites for ecosystems like the rainforest, mangroves, coral reefs, and endangered species such as Komodo and Orangutan (WorldAtlas 2017). Concordance lines 4 to 6 above mention different national parks: Baluran, Kepulauan Seribu, and Tengger Semeru. Baluran National Park is located in Banyuwangi, East Java, with 26 mammal species, 155 types of birds, and 444 species of trees. In concordance 5), there is also a metaphor, "heart of this archipelago" to refer to Kepulauan Seribu's Marine National Park. The source domain HEART refers to the conservatory area of endangered species like green and hawksbill sea turtles.

The national park is projected as the home of biodiversity protection. However, due to its massive promotion that invites global readers to visit the area, the national parks on the website fall into utilization zones offering nature-based tourism due to convenient location, condition, and natural potential (Pamungkas & Jones 2021). The tourism website emphasizes that Indonesian islands offer their tropical ambiance and storage of the world's endangered species. It agrees with the semantic tag O4.2+ about Judgement of Appearance as a persuasive strategy to lure tourists to visit. A similar strategy boosts the tourism destination description found in concordance 6) through the evaluative phrase "the only conservation ..." to refer to Bromo Tengger Semeru. In sum, Indonesia is an archipelago country that stores its natural beauty and endangered species. In general, the Indonesian tourism website consists of the following themes.

Table 3 above reveals that the Indonesian tourism website is constructed to promote nature and inform its readers about the location, route, and transportation the tourists can consider, both on land and by air. Aside from it, the website also includes culture as its element to be promoted, but the environment-related keywords still dominate the website, consisting of locations. However, rural areas are not identified by WMatrix5, so they are categorized as "unmatched" domains. The Indonesian website has thoughtfully introduced and informed rural tourism in its website. It is perceived as the most informative site among other South-East Asian tourism websites (Mura & Sharif 2015). Besides, the nature activities



Table 3. Summary of semantic domains, keywords, and themes of Indonesian tourism website.

Key Semantic Domains	USAS		Keywords Used	Theme
	tag	Freq		
Unmatched	Z99	4956	Kerinci, Indrapura, Jepara, Banyuasin, Natuna	location
Location and direction	M6	1940	located, route, destination, center, western, surrounded	location
Geographical terms	W3	1606	island, lake, beach, mountain, river, sea, waterfall	nature
Places	M7	1537	park, village, province, city, town	location
Geographical names	Z2	1469	Sumatra, Jakarta, Bali	location
Judgment of Appearance	O4.2+	693	pristine, beautiful, stunning, scenic, amazing, heavenly	nature attributes
Vehicles and transport on land	M3	586	drive, metro, bus, taxi, bus, motorbike	transportation
Sailing, swimming, etc	M4	433	marine, boat, ferry, port, dive, snorkel, swim, surf	nature activities
Social actions, states, and process	S1.1.1.	410	ceremonies, ceremonial, traditional, visit	culture
Flying and aircrafts	M5	304	flight, terminal, airport, plane	transportation

that are evaluated positively are the different themes that construe the global meaning of the website.

As a critical discourse study, this research regarded the macro discourse structure of tourism websites as a form of social action and interaction constructed in the participants' social context. The website producer is the ministry of tourism and creative economy, so its role is not only for financial purposes but also as a platform to build the nation's image. The thorough information and description on the website affect the readers' perception of the country. Accesses to get the destinations along with the modes of transportation are strategies that the website producer intentionally chooses to build an image that Indonesia is ready to welcome them. The infrastructures are well-developed so that they can find alternative routes and transportation to reach a destination.

The themes and topics of the website are affected by social cognition and beliefs about the role of tourism as one of the primary sectors to support the country's gross domestic product. The "location" and "transportation" themes are integral aspects of the "nature" and "nature activities" themes since the geographical terms become the primary sites promoted on the website. The construction of Indonesian islands as sites of plenty and storage of endangered species are socially constructed. The social cognition that Indonesia is associated with the world's lungs and national parks as hearts of the archipelago proves that discourse and mental dimension are multiply embedded in social situations and structures. The discourse in the form of text and talk are tools to construct, validate, normalize, evaluate, and legitimize the social representation, relation, and structure (van Dijk 1998).

The themes concluded from this analysis constitute a genre that aims to promote Indonesian nature and inform readers how to get to the destinations. The genres, persuasive and descriptive, are essential to reflect and shape our view of reality or how we see the world. The discourse of environment that dominates the global meaning of the website is a motivated choice to frame Indonesia as an archipelago country whose position as a host of endangered species needs to be acknowledged by global readers. This strategy favors the views and perspectives over others and grants influence to the readers as social factors contributing to the country's income (Torkington & Stanford 2020). The analysis provides further evidence of how the embedded discourse reproduces nature as a paradise and

storehouse of biodiversity. Indonesian tourism websites also shape the discourse of preservation through the keyword “park” in its promotion.

### 3 CONCLUSION

This paper concludes that discourse on the environment in Indonesian tourism is a strategy to fulfill the country’s purpose in the communicative event. Tourism is positioned as the country’s sector to support the country’s GDP. The website signifies nature, nature-related activities, rural areas, and other geographical names to promote destinations ranging from Sumatra to Papua. While the macro discourse structure represents the persuasive and informative genres, the website also projects Indonesia as a host for the preservation of endangered species. Including “park” or “national park” as one of the keywords entails the metaphor of Indonesia as a tropical paradise and storehouse of underwater life and other species. This paper limits its discussion to the global meaning of the tourism discourse as a form of social practice, so further analysis of the macro- and micro-discourse structures is recommended.

### AUTHOR’S CONTRIBUTION

The first author analyzed the data and wrote the paper. The second and third authors checked the analysis and draft and gave feedback regarding the content.

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# Robots to develop autistic children's social communication skills

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**ABSTRACT:** Robot-based interventions have been widely developed, but robots that are designed specifically for the development of autistic children's social communication using modeling techniques have not been developed. **OBJECTIVE:** The aim of this study is to develop a robot specifically designed to support interventions in developing social communication skills of autistic children and test the feasibility of the robot. **METHODS:** This research is an R&D study with the ADDIE model, which includes five stages: analysis, design, develop, implementation, and evaluate. A total of 15 respondents were involved in the limited test, and two experts were involved in carrying out the expert test. Data were collected qualitatively and quantitatively. Quantitative data were processed using descriptive statistics, and qualitative data were analyzed through inference. **RESULTS:** The study produced interactive robots to develop the social communication of autistic children in aspects of social cognition, non-verbal communication, and verbal communication. The robot is equipped with a wheel feature for moving and a screen for displaying videos. Furthermore, limited testing and expert testing showed the developed robot was fit for use. **CONCLUSIONS:** Therefore, this robot is feasible to be used to improve the communication skills of autistic children.

## 1 INTRODUCTION

The autistic spectrum is a neurological developmental disorder that impacts an individual's social and behavioral abilities (1). The number of individuals diagnosed with autism spectrum in Asian countries has increased rapidly in the past decade (2). In Indonesia, it is reported that there are more than 2.4 million individuals with an autistic spectrum in Indonesia, with a growth rate of 500 individuals every year (Indonesia's Ministry of Women's Empowerment and Child Protection 2018). One of the main barriers experienced in children with the autistic spectrum is social communication (4–6).

Social communication can be interpreted as the application of communication in a social context (7,8). Social communication skills include several aspects, such as social cognition skills, receptive communication skills, expressive communication skills, and pragmatic communication skills (9). Social communication skills are important abilities that must be mastered by every individual. Individuals who have good social communication skills can then easily manage emotions, develop care and concern for others and build positive relationships. Furthermore, social communication skills should be developed from childhood to achieve adequate social communication skills when they reach adulthood (10). One of the efforts to develop social communication for children on the autistic spectrum is through modeling techniques (11–13).

In terms of programs implemented by robots, no robot program explicitly applies modeling techniques and also applies a curriculum for developing aspects of social communication for autistic children. Comprehensively, for example, a robot called KERO was

developed by applying modeling techniques in its software program but only to develop one aspect of social communication: non-verbal aspects of communication (37). Furthermore, a robot-based intervention program has been developed that also applies modeling techniques but is used to develop musical skills involving some aspects of social communication only, such as imitations and rotating games (38).

## 2 OBJECTIVE

Social communication for autistic children is vital to develop because it becomes one of the important aspects of the quality of life. Unfortunately, social communication development programs still use face-to-face methods with therapists/teachers who have limitations such as the availability of trained personnel and limited time. As for the robots that are the solution to this problem, no study has implemented a comprehensive social communication program and, at the same time, has not implemented behavior modification techniques. Modeling has a positive impact on the development of social communication. Therefore, this study aims to: 1) develop interactive robots to develop the social communication skills of autistic children by applying modeling techniques; 2) test the feasibility of interactive robots to develop the social communication skills of children with the autistic spectrum by applying modeling techniques.

## 3 METHOD

### 3.1 *Research design*

This research applied a Research and Development (R&D) design approach. Research and development is a process used to develop educational products that can be accounted for. The model chosen is the Analysis-Design-Develop-Implementation-Evaluate (ADDIE) model. This model was chosen because it was commonly used in previous studies that developed technology for autism (39,40). The ADDIE model is a model systematically used for development models. Developing products using the ADDIE process is one of the recommended models because the ADDIE model is a process that serves as a guiding framework for complex situations, so it is appropriate to develop products, including robotic products (41).

### 3.2 *Research procedures*

In general, this research applies five main steps: analysis, design, development, implementation, and evaluation. More specifically, these steps are defined as follows.

1. The analysis was conducting a curriculum study of social communication development for autistic children obtained from FGD results with 15 respondents. FGD also involves a team of researchers who have expertise in the field of social communication development of autistic children.
2. The design includes several activities, namely:
  - a. Development of robotic software design.
  - b. Development of robotic hardware design.
  - c. Determination of robotic hardware materials.
3. Development is the process of producing robotic software and hardware. Included in this stage is the process of combining software and hardware to become an interactive robot.
4. Implementation is the process of conducting a limited user test with users to find out the convenient use of interactive robots and an expert test that involves two experts.
5. Evaluation is to make improvements to the robot based on expert test results and limited user tests.

### 3.3 Research subject

The subjects in the study involved 15 respondents to the FGD and limited user test. Fifteen respondents were comprised of five teachers of autistic students in special schools, five therapists at therapy centers for autistic children, and five parents of autistic children. Furthermore, the expert test involves two experts, namely experts in the intervention of social communication of autistic children and assistive technologists. Ethics for the implementation of expert tests and user tests obtained from the Ethics Team of the Faculty of Education, Universitas Negeri Surabaya.

### 3.4 Data collection techniques

Data collection techniques were carried out in each of the following stages: 1) During the Analysis, data were collected qualitatively by recording the response of FGD participants consisting of 15 respondents. The analysis focused on the social communication needs of autistic children. 2) Implementation, at this stage, a number of the same 15 individuals involved in the needs analysis stage tried the robot that has been developed. They responded using a scale of 1–5 (very unworthy to very worthy) to assess the robot's feasibility. Furthermore, the expert test was carried out by two experts, namely experts in social communication interventions of autistic children and assistive technology, to conduct tests with indicators that are the same as the limited user test.

### 3.5 Data analysis technique

Quantitative data obtained from the test results of the tool were analyzed through weighting on a scale of 1–5, then determined the percentage. The percentage results were then analyzed to determine the feasibility of tools developed using the feasibility category, as indicated by Table 1 (42).

Table 1. Eligibility categories of the developed media.

No.	Score in percent (%)	Eligibility Categories
1	< 21%	Very Unworthy
2	21–40 %	Unworthy
3	41–60 %	Decent Enough
4	61–80 %	Proper
5	81–100 %	Very Worthy

Table 1 explains the eligibility categories on the result of the usability test on the media or technology that is being developed.

Furthermore, qualitative data obtained from the expert tests of assistive technology experts and social communication intervention for autistic children expert were analyzed through the drawing of relevant conclusions.

## 4 RESULTS AND DISCUSSION

### 4.1 Robots for social communication development of autistic children

In the analysis stage, a social communication development curriculum design was produced based on the input from respondents during the FGD process. In general, social communication will be divided into three abilities with seven sub-abilities. Three abilities are social cognition, verbal communication, and nonverbal communication, while the four



sub-abilities are getting to know emotions, joint attention, responsive communication, requesting communication, commenting communication, reciprocal communication, and gesture. In more detail, the analysis of the curriculum is described in Table 2.

Table 2 explains in detail the social communication curriculum that is developed after the analysis stage.

Table 2. Results of social communication curriculum analysis.

No.	Aspect	Sub-Aspects	Indicators
1	Social Cognition	Getting to Know Emotions	I'm sad
2			I'm happy
3			I'm afraid
4			I'm angry
5		Joint Attention	I'm confused
6			Look at me
7			View books
8			View pencil
9			View circles
10			See triangle
11			View the chair
12			View table
13	Verbal communication	Responsive communication	Do you want to?
14			want
15			Do you want to?
16			not
17			Which one do you want?
18			this
19			Do you like
20			I like
21			want to eat?
22			Want
23			Don't want to
24			Want a drink?
25		Want	
26		Don't want to	
27		Want to play?	
28		Want	
29		Don't want to	
30		Are you thirsty?	
31		Yes thirsty	
32		Not thirsty	
33	Are you hungry?		
34	Yes hungry		
35	Not hungry		
36	Requesting communication	Please close the door	
37		Please take the book	
38		Please take a chair	
39		Please take the table	
40		Ask	
41	Commenting communication	Borrow	
42		Hooray	
43		Passionate	
44		Don't like	
45		Delicious	
46	Not good		

(continued)

Table 2. Continued

No.	Aspect	Sub-Aspects	Indicators
35		Reciprocal communication	Good morning
36			Good afternoon
37			Good afternoon
38			Good night
39			Hey
40			Equally
41		Until tomorrow	
42	Non-verbal communication	Gestures	Don't like (hand, shake)
43			Agree (sleepy)

Furthermore, the results of the preliminary analysis concluded that the robot developed must meet the following criteria: they have an area for displaying visual writing/expression, be completed with a clear child's voice, be flexible in moving, and their external performance can be adjusted according to the interests of the child. At the design stage, a robot flow diagram was developed, and the outer view of the robot was. The flowchart, as shown in Figure 1, shows the stages of using the robot. The outer design of the robot is shown in Figure 2. The robot's outer display includes a screen to display expressions, speakers to make sound, and wheels to make the robot easier.

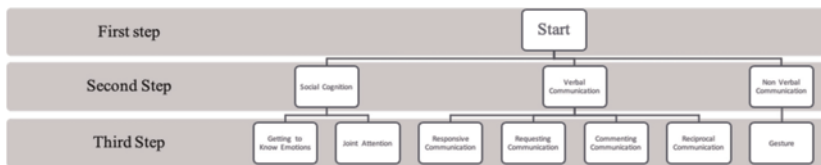


Figure 1. User flowchart on using the robot.

This figure describes the user flowchart on using the robot, particularly on accessing the software of the robot.

This figure depicts the front view of the robot that was developed.

In the development stage, interactive robots were developed through three stages: the development of the robot's exoskeleton/hardware, the development of robotic programs, and the integration of the robot's exoskeleton/hardware with the robot program. At the stage of development of the exoskeleton, a robotic body was developed, which is composed of strong but quite light material (Figure 3). In this stage, the robot body is also equipped with wheels and an area for the LCD screen.

Figure 3 depicts the skeleton of the robot that was currently being developed.

At the stage of development of the robot program, the audio was recorded live with autistic children, while the photo was taken with a real model. The audio and images were then integrated into one program as the sequence in the flowchart in Figure 1. The last stage is the integration stage, where the robot program developed is then united with the robot framework. This process produces interactive robots to develop the social communication of children with the autistic spectrum.

The robot also uses video on its interface to support the application of the recommended model behavior modification techniques for autistic children. This is in line with studies that developed the robot to develop communication skills by applying modeling techniques

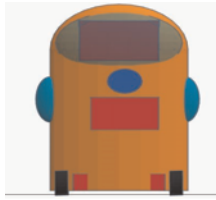


Figure 2. The outer view of the robot.

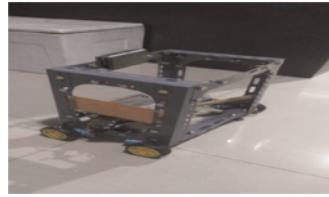


Figure 3. Robotic skeleton.

(37,38). Moreover, some studies also reported that modeling could help the optimal development of autistic children, particularly in developing the social communication aspect of autistic children (16–18,43). In terms of features available, the developed robot is also equipped with wheels for moving, clear sound, and good video quality.

#### B. Result of feasibility test of the robot

At the implementation stage, expert tests and user tests are carried out on robot products that have been developed. The user test involved five teachers of autistic students in special schools, five therapists in therapy centers, and five parents as user test subjects. In the user test process, the user subjects tried to use interactive robots that had been developed. Based on five indicators—ease of turning on the robot, ease of menu navigation on the robot program, sound quality, illustration quality, and ease of turning off the robot—subjects rated the robot on a scale of 1–5 (very less to very good) based on their assessment. The results of the user test assessment are described in Table 2.

Table 3 summarizes the responses during the feasibility assessment during the limited user test.

Table 3. Results of feasibility assessment from users.

Indicators (1–5)	Number of Responses					Percentage	Average Percentage
	1	2	3	4	5		
Ease of turning on Robot	0	0	0	5	10	93%	95%
Ease of navigation menu on the robot program	0	0	0	2	13	97%	
Sound quality	0	0	0	1	14	99%	
Quality of illustration	0	0	2	5	8	88%	
Ease of turning off robots	0	0	0	3	12	96%	

The results of the user assessment showed that the quality of the developed robot was already very good. This is shown from the average value on all five indicators that show a percentage above 85%. As for only the quality aspect of the illustration, that shows a percentage below 88%.

Expert test results matches with the user’s test results. Assistive technology gives appreciation to the ease of use and design of robots, although the quality of photos must be improved again. The expert in the intervention of social communication of autistic children conveyed similar things related to ease of use, flexible design of robots, and appropriate social communication curriculum. The expert in the intervention of social communication of autistic children conveyed input regarding the ease of changing the existing programs on robots.

The evaluation stage is carried out to make improvements based on the results of assessments and inputs from expert tests and user tests which include improving LED screens to improve the quality of illustrations and navigational changes in program selection.

Interactive robots that have been developed also show positive results both at the user test stage and expert tests. The user test results showed an average of 95%, so it was declared very feasible. This is in line with previous research showing that robot-based interventions have a positive impact on children with the autistic spectrum. The Kaspar robot, which has been developed since 2005, also proved to have a positive impact on autistic children's development (35). Moreover, another robot called the TeOG robot also has a positive outcome on developing autistic children's social interaction ability through games (36).

## 5 CONCLUSION

This research and development study has reported several findings as follows: a) A robot has been successfully developed to develop the social communication skills of autistic children. The robot consisted of hardware and software consisting of video by applying modeling techniques. In terms of the social communication aspects, this robot could develop three aspects of the social communication curriculum, including social cognition, verbal communication, and non-verbal communication b) The limited user test results showed 95% of feasibility, and expert tests show that the robot is feasible to use, although some improvements still need to be made.

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## AUTHOR CONTRIBUTIONS

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## ETHICAL CONSIDERATIONS

This study was granted Ethics approval from the Board of Ethics of the Faculty of Education, Universitas Negeri Surabaya with the approval letter number 834/UN38/HK/PM/2021. The approval period was from June to December 2021.

## CONFLICT OF INTEREST

The authors have no conflicts of interest to report.

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# Developing global collaboration skills in the era of unlimited learning

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**ABSTRACT:** At this time, the world of Education has entered the era of unlimited learning. In learning theory, the era of infinite learning is known as seamless learning. The era of unlimited learning demands a renewal of strategies, methods, media, and learning models. The era of unlimited learning challenges 21st-century Education, namely the increasing need for Education that can answer global demands: schools, colleges, and educational institutions whose graduates are expected to have a strategic role in social life. Education is expected to improve the skills of the 21st century, namely creative thinking, critical thinking and problem-solving, communication, and collaboration. One of the indicators of collaboration skills that educators need to anticipate in order to foster student learning and development is the potential to adjust to the changing global civilization and collaborate effectively. At least one or four domains of collaboration skills are needed in solving a problem in the present and future, namely (1) the ability to form a team, (2) learning a work collaboratively, (3) carrying out problem-solving collaboratively, and (4) managing differences in the team. Developing global collaboration skills in the era of unlimited learning can be done through four stages, namely (1) learning contextual idioms in the classroom face-to-face and or online synchronous virtual learning, (2) out-of-class, contextual, (3) online collaborative learning, and (4) consolidation in the classroom.

## 1 INTRODUCTION

The world is currently in an era of disruption, multi-literacy, digital, and the 4.0 industrial revolution. The disruption is an era of massive innovation and change that fundamentally changes all existing systems, arrangements, and landscapes in new ways. Disruption is innovation. This is an innovation that will replace the old system in new ways. Disruption has the potential to replace old players with new players. Disruption replaces old, all-physical technology with digital technology that produces something new, more efficient, and more valuable. Multiliteracy is an approach that can be used to understand various types of texts and various forms of media produced by various new technologies through the concept of pedagogy that allows teachers to present information to students using various forms of text and media. The digital era is a condition of the era of life in which all activities that support life can be made easier with sophisticated technology. The digital era is also here to replace some past technologies so that they can be more modern and practical. The industrial revolution 4.0 is a comprehensive transformation that covers all aspects of production from industry through the fusion of digital & internet technology with conventional industry.

The change has accelerated since the coronavirus pandemic (COVID-19). The COVID-19 pandemic has had a significant impact on learning processes around the world. Learning that was originally face-to-face became distance learning, especially online learning.

Distance learning is carried out to prevent the increasing transmission of COVID-19. In distance learning, educators are not the only source of information; online learning resources greatly facilitate learners and can be accessed quickly. The forms vary from text-based ones packaged in e-journals, e-books, and audio-visual-based ones such as Youtube and other learning resources. In other words, we have now entered a new era of learning, namely the “era of infinite learning” without being bound by resources, space, distance, and time which is different from the previous way of learning, which was limited by the walls of the school or campus, using learning resources from books and educators.

The presence of an era of unlimited learning requires the renewal of strategies, methods, media, and learning models that are more relevant to students’ learning habits. The old learning model is no longer suitable for learning learners’ habits. This is the challenge of 21st-century Education which is the field of educational technology. The real challenge of 21st-century Education is its elevating need that can answer global demands: schools, colleges, and educational institutions whose graduates are expected to have a strategic role in social life. Education is expected to improve the ability to think creatively (creative thinking), critically thinking and problem-solving (critical thinking and problem solving), communicate (communicate), and collaborate (collaborate). Students are prepared to learn how to learn and can develop their potential to adjust to the development of civilization and collaborate globally.

## 2 METHOD

Literature research or literature review is research that examines or critically reviews the knowledge, ideas, or findings contained in the body of academically oriented literature, as well as formulating its theoretical and methodological contributions to a particular topic, Literature review not only means reading literature but rather focusing toward in-depth and critical evaluation about previous research on a topic. The method of writing this article is a literature review, namely reviewing by collecting, understanding, analyzing, and concluding as many as 28 international journal articles published from 2010 to 2021 concerning the application of lean six sigma application of various industrial sectors and defense industries. The analysis was used using 30 analyses of the content of journal articles, and then coding was carried out on the contents of the reviewed journal; the data that had been collected was then searched for equations, and the differences were then discussed to conclude.

## 3 FINDINGS AND DISCUSSION

### 3.1 *The era of unlimited learning*

At this time, learning is not limited by space, time, and source. Learning can be done anywhere, anytime, and with any learning resources. Almost 2 years of learning worldwide that was previously carried out indoors have now turned into online learning through various applications, ranging from WhatsApp, Google Meet, Zoom, and other applications. Learning can be processed anytime, with anything/anyone, and anywhere. Such a learning environment is named learning without limits or popularly known as seamless learning. The term seamless learning was not first associated with the use of learning technology, as stated by Kuh (1996). He stated that “the word ‘seamless’ suggests that what was once believed to be separate, distinct parts (e.g., in-class and out-of-class, academic and non-academic; curricular and co-curricular, or on-campus and off-campus experiences) are now of one piece, bound by together by r to appear whole or continuous. In seamless learning environments, students are encouraged to take advantage of learning resources inside and outside the classroom, and they are asked to use their life experiences to make meaning of materials



introduced in classes”. Chan, Roschelle, Kinshuk, Sharples, Brown, et al. (2006) define seamless learning as a way students can learn in various scenarios. They can easily switch between different learning scenarios or contexts (such as formal and informal learning, personal and social learning, and others), with personal devices as mediators. The learning process moves beyond acquiring content knowledge to develop the capacity to learn smoothly. This means that the learning environment is not only formal but also informal learning environment. The learning process is not only individualized learning but also social learning.

The word *seamless* denotes that what was once believed to be separated between different parts (e.g., in the classroom and outside the classroom, academic and non-academic; curricular and co-curricular, or on-campus and off-campus experiences) is now one part, tied together so that it appears intact (Kuh G. D. 1996). Therefore, it is essential to relate (bridge) both learning settings (formal and informal), as well as individual and social learning and physical and digital learning spaces (Wong 2013). Formal learning refers to learning in an educational institution generally recognized in qualifications or certificates. At the same time, informal learning refers to learning resulting from daily work, family, or recreation activities. The implementation of these two learning strategies is carried out separately, even though the two learning strategies support each other to achieve learning objectives. Several institutions have tried to combine the two strategies. However, there is still a blurring of boundaries between formal and informal learning (Kukulka et al. 2017).

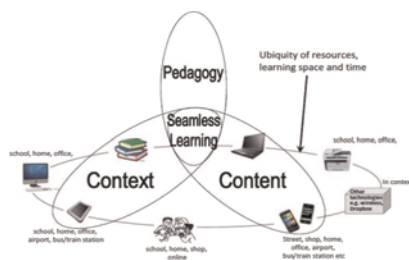


Figure 1. Pedagogical visualization of learning without limits: context, content, and resources that are ubiquitous, learning space and time.

Wong (2013) says it is impossible to equip learners with all skills and knowledge by relying solely on formal learning. He stressed the importance of connecting learners’ experiences in and outside the classroom to create smooth learning and academic success. Integrating formal and informal learning is one of the dimensions of *seamless learning*.

According to Wong (2015), seamless learning is a learning model that contains the concepts of continuity and continuity in the learning process that occurs indefinitely in time and space. Some writings use the term Mobile Seamless Learning (MSL) in learning practice. MSL is a learning model that contains the concept of continuity and continuity in the learning process that occurs without time and space limits. MSL physical-digital world.

According to Wong & Looi (2015), there are ten dimensions of MSL, namely:

- MSL1: covers formal and informal learning
- MSL2: includes personal/ personal and social learning
- MSL3: learning that occurs with time
- MSL4: learning that happens by crossing locations
- MSL5: ubiquitous-based knowledge access (a combination of context-aware learning, augmented reality learning, and ubiquitous access to online-based learning resources)
- MSL6: covers both digital and non-digital worlds
- MSL7: Combining the use of different types of devices

MSL8: Seamless and fast switching between multiple learning tasks (such as data collection + analysis + communication)

MSL9: synthetic knowledge (previous and present knowledge and multiple levels of thinking skills and multidisciplinary learning)

MSL10: includes *multiple pedagogical* or learning activity models (facilitated by educators)

The MSL visualization in Figure 2 is an ecological picture of MSL that places learners as learning centers or *learner-centric*. The placement of learners as *learners-centric* does not mean that they are the center of attention of educators alone, but are the center of knowledge generation that occurs in various contexts in the multidimensional learning space. In this case, MSL is not just about learning anywhere and anytime; learning happens continuously and crosses contexts. The facilitation of seamless learning (FSL) bridges two learning settings so that they are interrelated. They are bridging between formal and informal learning (MSL1), individual and social learning (MSL2), and physical and digital learning spaces (MSL6). Here is a look at the design for the FSL process.

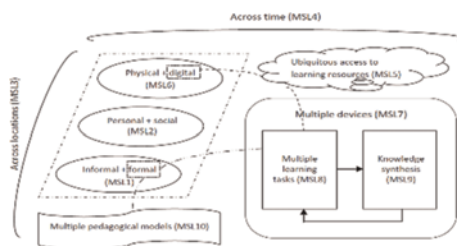


Figure 2. Visualization dimensi *mobile seamless learning* (MSL). (Wong 2015).

In an MSL environment, learners are encouraged to take advantage of existing learning resources inside and outside the classroom. Students are asked to use their life experiences to interpret the material introduced in class. Call (2006) explains that allowing learners to learn whenever they want to know and switch between different contexts, such as formal and informal contexts between individual and social learning, expands the social space in which learners interact with each other. According to Chiu et al. (2008), the ubiquitous learning environment allows for seamless learning anywhere and anytime. Students are allowed to learn without having to be distracted when moving from one place to another. Rogers (2009), in MSL cellular technology, can be designed to enable children to move in and out of overlapping physical, digital, and communicative spaces. Mobility can be achieved individually, in pairs, in small groups, or as a whole. Modern e-learning systems can offer personalized learning support and solutions in real-time. Such an approach combines real-time assessment, learning, and pedagogical considerations into one good learning activity.

Wong (2013) developed systematic, seamless learning by designing a facilitated learning environment or Facilitated Seamless learning (FSL). This study proposes a design framework for the FSL process, including MSL1, MSL2, and MSL6. Then the activity process cycle consists of learning engagement, personal learning, online social learning, and consolidation in the classroom. The results showed that the post-test scores were significantly different (increasingly) from the pre-test scores. Furthermore, following research on seamless projects (Sha et al. 2012; Zhang et al. 2010) this study developed an educational ecology for sustainable learning in primary schools. Part of the project is to mobilize the two-year formal science curriculum and turn subject learning into a continuous learning experience.

Song (2014) researched Bring Your Device (BYOD) in seamless learning. This refers to technological devices in which learners carry personally owned mobile devices with various embedded applications and features to use anywhere and anytime for learning purposes. Through inquiry and seamless learning strategies, the ability to analyze students can be improved. Wong, L.-H., Chen, W., & Jan, M. (2012) conducted research on the influence of seamless learning on critical thinking ability. In this study, with the help of mobile phones, the learning process highlighted students' thinking habits and skills in interpreting daily activities related to the information obtained in formal learning. A learning design that emphasizes the diversity of contexts and the resulting artifacts. This research proves that seamless learning can train students' thinking and problem-solving skills.

### 3.2 *Collaboration skills*

Collaboration is working with one or more people to complete a project or task or develop a particular idea or process. In the workplace, collaboration occurs when two or more people work together toward a common goal that benefits the team or company. Workplace collaboration requires interpersonal skills, communication skills, knowledge, and strategy sharing and can occur in an offline office or among virtual team members. Collaboration skills are the ability to participate in every activity to build relationships with others, respect relationships, and work as a team to achieve the same goal (Le et al. 2017). Indicators that show collaboration skills are contributing actively, working productively, showing flexibility and compromise, showing responsibility, and showing respect (Greenstein 2012).

Working together as a team promotes greater productivity and fosters healthy relationships between work teams. There are at least four other benefits of collaboration. First, collaboration helps solve problems, which allows maximum results because it involves various professionals with diverse skills and knowledge. This allows team members to see from different perspectives. When team members can leverage the expertise of many people, they are also more likely to solve problems faster and lead to better results in the long run. Second, knowing and analyzing self-potential. Working collaboratively can help you become more aware of your strengths and weaknesses. The collaboration will help improve your best skills and identify where you need help from people with different skills. As a result, you and your teammates can work together better to fill competency gaps. Third, share knowledge. Team members can learn a lot from other team members whenever they come together to collaborate. A company that values collaboration will openly encourage its employees to share knowledge. Employees feel safe knowing the workplace values opportunities for growth and development, and they will also feel motivated to expand their skills beyond their current job duties. Fourth, improve work efficiency. It is easier to work together to complete projects and meet deadlines when you have the support of your team. Several people working together can divide tasks in a way that makes use of each individual's greatest strengths. Instead of struggling to complete tasks you are not comfortable doing, you can focus on the areas you are good at and get immediate feedback from other team members.

For students to adapt to the global era, at least four domains of collaboration skills are needed in solving a problem in the present and future, namely (1) the ability to form a team, (2) learning and working collaboratively, (3) carrying out problem-solving collaboratively, and (4) organizing differences in the team (Hill & Hill 1993). Here is a breakdown of the four capabilities.

#### (a) Team building ability

In general, students are elementary to work in a team, especially if the team members are close friends. However, sometimes between them, there are often prolonged conflicts in forming a team. Conflict occurs due to differences in views, mindsets,

backgrounds, statuses, goals, etc. In learning, these differences need to be accommodated (Slavin 1997) because they are critical in building peace in life.

There are several advantages to a team whose members are diverse. The advantage, among other things, is that they will gain more than other learners with different genders, backgrounds, and abilities. Each learner has certain advantages, which other learners may not have. According to Hill & Hill (1993), some of the abilities of students that may be needed at the team formation stage, namely (1) providing space for others, (2) making couples/ circles, (3) making eye contact, (4) staying in their team, (5) using a soft/low voice, (6) using people's names, (7) not giving up hope/giving up quickly, (8) taking turns, (9) using one's mind/not using other people's hands, (10) form a team without disturbing others, (11) allow other friends to speak, and (12) actively listen.

(b) Ability to Work in a Team

After forming a team, there are several ways to improve team performance, namely creating tasks and forming a team organization. For example, the chairman, and secretary, who does task 1, task 2, and so on. That is the right way to make the team more optimal. The presence of a leader or spokesperson in a team will provide an advantage in completing tasks. Every role within the team spurs performance to be more effective and efficient (Hill & Hill 1993). The role includes (1) observing, (2) taking notes, (3) asking, (4) summarizing, (5) encouraging to contribute, (6) providing further explanations, (7) organizing settlements, and (8) timing.

(c) Problem-solving skills

There are several abilities that learners need to have to work effectively in teams to solve problems. The ability to list ideas and alternative problem-solving can be applied in starting a discussion. They can write it down based on their agreement, which can be repeated continuously until the final stage. The most important part of the problem-solving team is the ability to build debates about alternative solutions and then agree on one problem-solving. When preoccupied with problem-solving, learners can explain their ideas or ideas or their positions. These discussions stimulate thinking and improve the quality of learning (Hill & Hill 1993).

(d) Ability to manage differences

Each individual is essentially different. Those differences include intellectual development, language skills, experiential background, ways and styles of learning, talents, interests, and personality. Managing these differences requires specific abilities that are very important both at the time of participating in learning activities and for their future. Looking at problems from a different angle, learning to organize, and mediating when conflict heats up are invaluable abilities for one's daily life and future (Hill & Hill 1993). The abilities needed to manage differences include: (1) arranging positions, (2) looking at problems from another point of view, (3) negotiating, (4) mediating, and (5) determining agreements.

### 3.3 *Developing collaboration skills in an era of seamless learning*

The skill of collaborating is not a legacy but something that can be learned. One way to practice collaboration skills is through Education and learning (Istoyono et al. 2014). Education is carried out to develop knowledge based on the core subject of learning and must also be oriented so that learners have collaborative abilities. For students to have this ability, they can train by providing challenging problems that exist in real life (Zubaidah 2016).

One of the learning models that can be chosen to develop collaboration skills in the era of seamless learning is seamless learning. The syntax of the learning process without limits can be carried out through four stages, namely (1) learning contextual idioms in the classroom/campus/school or online synchronously virtual (virtual learning), (2) out-of-class, contextual,

(3) online collaborative learning, and (4) consolidation in the classroom. The visualization of infinite learning syntax is visualized in Figure 2.

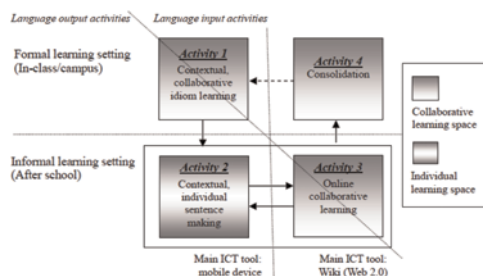


Figure 3. The Facilitated Seamless Learning (FSL) framework (Adapted from Wong 2015).

The process of the four activities is described below,

Activity 1: Contextual idiom learning in the classroom/campus/school or online in a synchronous virtual (virtual learning).

This activity is carried out to convey learning objectives, material that needs to be mastered by students, activities that need to be carried out by students, and learning assessments that educators will carry out. At this stage, educators can use presentations via multimedia. Learning begins with essential questions such as questions that can be assigned to students in an activity. The topic of the assignment corresponds to the real world that is relevant to the learner. Furthermore, the teacher motivates and prepares learners to engage in subsequent activities independently or collaboratively. Mann (2003) recommends a collaboration team with criteria, namely (1) a learning team consisting of 3–5 people, (2) a learning team starts work with equalization of perception activities about the learning process to be carried out, (3) a team consisting of those who have different levels of knowledge, different backgrounds, and different experiences. These differences will have a positive impact on learning. For example, each individual brings strength to his team, each member is responsible for their strength, and team members who are uncomfortable with the majority must be supported and proactively empowered to provide input and (4) commit members to achieve a goal. Each collaboration team can do simple research and then be evaluated and discussed in the classroom. In this context, each team member functions as a collaborative and productive player to achieve the desired result.

The learner must fully understand this concept of “team” with all its aspects. Lack of understanding of this concept can result in a lack of awareness of the importance of furnishings, not being able to prioritize team goals over individual goals, and in turn can result in making mistakes in organizing meetings, ignoring deadlines for completing teamwork, lack of fullness in responsibility, and lack of being able to work efficiently. Each team must have a leader to lead meetings or meetings, be a liaison between the team and the educator, and carry out other leadership functions. The team leader must also work with the educator to deal with any problems that arise and need the help of the educator. A team may face a conflict or problem that its team members cannot overcome, so it is forced to involve the learner in solving it. Nevertheless, according to Bowen (1998), it is essential to emphasize the core of the conflict or problem, why it can happen, and how to overcome it. It should be discussed by team members first without hastily inviting educators’ intervention so that learners are accustomed to recognizing carefully and effectively addressing any problems or conflicts faced by their team.

It could be that team members need to remember the details of the critical work they have to deal with. Therefore, it is beneficial if educators provide it by writing a handout to guide

students to carry out team activities collaboratively. Here are several strategies proposed by Howard (1999) to help the team focus on the main tasks it has to work on:

- (a) Share in writing instructions for the implementation of activities carried out by the team. The instructions are detailed so students can handle the confusion in carrying them out. In this way, learners do not rely solely on memories or notes made by each team member.
- (b) Create a schedule for the completion of temporary tasks, which includes the date of completion of the activity, record cards, and an outline of the preparation of the report. If a schedule has been prepared, for example, to carry out library research and in the field, perform various skills in different classes with educators from different disciplines, or conduct meetings in other places outside the classroom, all of these must be included in the schedule.
- (c) Discuss with learners and provide photocopies of evaluation sheets that can be used to assess aspects of team activities. This is useful to help the learner understand how to complete his activities properly and optimally.
- (d) Each team member has a record of activities divided into sections to organize the activities to be completed. Task sheets, instructions for implementing activities, and activity schedules must be attached to the front of the learning notebook.

The division of responsibilities carried out by educators in a prudent manner can reduce the success of collaborative work patterns. Often people argue that the division of labor among team members is best based on mastery of pre-existing skills. For example, in a team of three, where one person is proficient in operating a computer, one person has the advantage of doing research, and the other has the advantage of compiling activity reports. It sounds ideal if the division of tasks is adjusted to each team member's mastery. Such a division of duties contains serious weaknesses because untrained learners master and complete work in a broader scope required to be competitive when they enter the workforce. As a result, learners harbor weaknesses and limitations of opportunities to acquire or improve other competencies that are also important. On that basis, he suggests that to achieve maximum results in working collaboratively, each team member accepts responsibility not only for tasks for which they already have skills or mastery but also for tasks that they have not yet mastered while learning and improving their skills while completing activities with their team members. The modern work environment requires people who can appreciate the importance of responsibility, not only from the team as a whole but also from each person on the team. Therefore, it is essential to appreciate this responsibility to be developed optimally for students in preparation before entering the world of work.

#### Activity 2: Out-of-class, contextual

There are two learning activities in the out-of-class stage, contextual, namely learning/working collaboratively and presenting learning/work results.

- (a) Learning/working collaboratively.

At this stage of collaborative learning/working, students bring technological tools; for example, cellular til pan is tasked with identifying or creating a context in their daily lives. Each team member independently or collaboratively looks for various sources that can clarify the issue being investigated. It could also be that the activities of students are in the form of designing and developing a project that needs to be done collaboratively. The source in question can be written articles, images, videos, or hypermedia stored in libraries, web pages, or even experts in the relevant field. Investigative activities have two objectives, namely (1) so that students seek information and develop an understanding that is relevant to the problems that have been discussed in class, and (2) information is collected with one purpose, namely presented in class and the information must be relevant and understandable. Each learner can deepen the material according to the division of tasks in their respective teams.

The material can be deepened through references (books, journals, magazines, internet browsing, and information from experts). Apart from meetings with educators, learners are free to hold meetings and conduct various activities. In the meeting, students exchange the information they have accumulated and the knowledge they have built. Learners should also organize the information discussed so that other team members can understand the relevance of the problems.

To develop collaboration skills, educators “transfer” all authority to the team through collaborative learning, while cooperative learning does not do anything like this. Collaborative work gives power to students, and they must have the courage to take all risks as agreed upon. It could be that the team’s work needs to be better approved, in an unconvincing position, too simple, or produces a solution that does not match the educators. It is based on the view that each person has a handle, a contribution of interpretative vocabulary, history, values, conventions, and interests. The educator may “not have the same perception” as the learner, so he cannot help the learner negotiate the limits of the knowledge the community already has, even though it may be academically mastered. Every knowledge of society has a core knowledge that it is a member of society that needs to get a role (but not necessarily absolute). To function freely in society, learners must master enough materials to become more familiar with society.

McCahon & Lavelle (1998) looked on. The view of collaborative learning as learning oriented toward “transaction”. The orientation consider learning as a dialogue between students and other students, students with educators, and students with their communities and environment. The learners are viewed as problem solvers. This perspective views teaching as a “conversation” in which educators and learners learn through negotiation. The negotiation process in collaborative learning has six characteristics, namely (1) the team shares tasks to achieve learning objectives, (2) team members give input to each other to understand better the problems faced, and (3) team members ask each other questions to understand more deeply, (4) each team member tells other members to talk and give input, (5) teamwork is accounted to other (people), and accountable to himself, and (6) among the team members there is interdependence.

Several factors need to be considered in collaborative learning, namely, the role of students and educators (Panitz 1996). The role of students that must be developed includes (1) to develop, that is, to develop a plan to be implemented and to propose alternative solutions to the problems faced, and (2) explain, that is, providing explanations or conclusions to other group members, (3) asking questions, that is, asking questions to collect information that you want to know, (4) criticizing, that is, asking objections and questioning the reasons for the proposal/the opinions/statements proposed, (5) summarize, that is, making conclusions from the results of the discussion or explanations given, (6) taking notes, that is, making notes about everything that happened and obtained by the group, and (7) mediating, that is, easing conflicts and trying to minimize tensions that occur between group members. Meanwhile, learners’ role shares responsibilities described and agreed upon by each member. The approval includes (1) ability to attend, readiness, and time to fulfill teamwork, (2) discussions and disagreements focusing on problems that are solved by avoiding personal criticism, and (3) tasks that are responsible and completing them on time. Learners can carry out tasks according to their own experience. However, they have less experience than other members who are essential to think clearly /well according to their capabilities.

The roles that students must avoid are: (1) free-rider, that is, letting their friends do teamwork without trying to participate in the collaboration process, and (2) sucker, that is, not participating in contributing because they are unwilling to participate. Share their knowledge, (3) dominate, that is, master the course of the task completion process so that the contribution of other team members is not optimal, (4) ganging up on the task, which tends to avoid tasks and show little effort to complete them.

Learners no longer give lectures in front of the class but can play the following roles: (1) facilitator, by providing facilities that facilitate the learning process; regulate the physical environment, provide or show sources of information, and create a conducive climate that can encourage students to have certain attitudes and behaviors, and design assignments; (2) the model, actively seeks to be an example in carrying out practical learning activities, such as giving examples of how to express thoughts verbally, (3) trainers, providing instructions, feedback, and directing students' learning efforts. Students keep trying to solve the problem before getting teacher input.

(b) Presenting learning outcomes/collaborative teamwork

After students learn/work collaboratively, they organize, process, and present learning/work results in the form of reports, written articles, photos, videos, and multimedia. The report was uploaded to the e-learning class/school/campus (at Surabaya State University, it was uploaded on <https://vinesa.unesa.ac.id>). In today's digital era, the media that is again popular in presenting the results of students' learning/collaborative work is a virtual exhibition. The creation of virtual exhibitions is the same as making exhibitions offline. Making a virtual exhibition certainly makes a design in advance so that the virtual exhibition is as expected. Ada has several main stages that must be fulfilled, one of which is the theme of the exhibition. The exhibition's theme can be agreed upon by educators and students, as well as the concept of the artwork carried. Because it will present the results of learning/work works, the first step must be the results of learning/works that will be exhibited. Learning outcomes can be categorized into writing, visual, audio, audio-visual, or multimedia. Exhibitions can be grouped into two: (1) solo exhibitions, namely exhibitions that are held individually with only one person displaying their work, and exhibitions of group work, which present the learning results of the learning team/collaborative work. The next stage is arranging or decorating a virtual room; the virtual arrangement must also be supported by the works that will be exhibited. The work must have been collected in advance that the student has done. The work must follow the agreement based on understanding the learning material.

Various websites can be used to create virtual exhibitions for free, also known as, at no cost. One of these websites is [artsteps.com](http://artsteps.com), a site specializing in photographic artwork and painting widely used by professionals and the community. This exhibition site not only exhibits artwork in the form of photos, but students can also interact with the photos to see the work's results in detail. The work is also given a description, how to make his artwork in the form of a video, and so on, depending on the creator or developer of the virtual exhibition. So with the interaction in the exhibition, students are expected to be able to learn through technology.

The implementation of the exhibition was launched when the arrangement of the virtual exhibition was created. Students certainly prepare in advance so that the virtual exhibition (online) is ready to be visited. Educators provide understanding to students with technical materials so that students can access the exhibition. Stages—stages of preparation for the implementation of the exhibition, namely, (1) Teachers publish through online media so that many people can visit the exhibition, (2) prepare electronic devices (gadgets) such as smartphones and laptops, (3) provide internet quota/internet access so that they can watch the exhibition online (4) mouse and keyboard, which functions as student interaction with learning media in the form of virtual exhibitions.

Learner-centered learning can be achieved by building a learning system. As Munir (2017) said in his book “digital learning”, this allows students to acquire a variety of more exciting and interactive learning skills, which is an understanding of mobile learning. Traxler in Munir (2017) states that mobile learning is learning delivered through technology. Mobile learning is considered part of improving the quality of learning by utilizing technology in a digital learning system. In the implementation of virtual exhibition activities, it is hoped that



students will be able to understand the material in the virtual exhibition. Virtual exhibitions display students' work and are also used as a medium for learning fine arts.

The work can also be presented through social media to maximize learning output. Social media has several benefits for its users, mainly because it is faster than conventional media, such as print media, advertising, TV, brochures, and flyers. Moreover, the sophistication of social media can reach its users with unlimited distance. With the rapid development of technology, so many kinds of social media are now often used by Indonesians. It starts from YouTube, WhatsApp, Facebook, Instagram, and many others.

#### Activity 3: Online collaborative learning

Garrison et al. (2000) define Online Collaborative Learning (OCL) as an approach that transcends the boundaries of ordinary interaction. Collaboration leads learners to a shared experience, the purpose of which is the construction of knowledge. Everett and Drapeau, curated by Stoytcheva (2018), argue that collaborative learning involves joint work in which various knowledge and experiences are used to acquire quality through angular collisions of different views and interactions in which general ideas are brought to discussion. Developed participants take on different roles and responsibilities. Collaboration focuses on approaches and techniques that use the internet to facilitate collaboration and knowledge-building to reshape formal and informal Education for the era of knowledge. Doing so in a proven way improves learning (Harasim 2017).

OCL is a development of a collaborative learning model carried out online. Collaborative learning is a learning ideology where students are taught to cooperate, learn and grow together. If someone can cooperate in the learning process, the hope is that they can become better citizens in the future. Collaboration in online learning is described by Harasim (2017) in the form of collaborative circles as follows:



Figure 4. Examples of using online collaborative learning.

Through OCL, learners conduct friend assessments by commenting (with commenting tools) and correcting or improving the sentences of their peers.

#### Activity 4: Consolidation in the classroom

At this stage, each group or learning team presents the learning outcomes as has been done in the third stage. Students exchange knowledge by discussing with their team to clarify their achievements and formulate solutions to team problems. This knowledge exchange can be carried out by how the learner gathers according to the team and the learner or assistant learner. Each team determines the leader of the discussion, and each member conveys the results of their work/learning by integrating their learning results to get conclusions. The next step is the presentation of the results in the plenary (large class) by accommodating input from the plenary, determining the conclusion, and final documentation.

To consolidate in the classroom, educators can use the recitation method, which is an assignment method that emphasizes the delivery, repetition, testing, and examination of oneself through several tasks given by educators to learners both during and outside school

hours within a certain period and the results are accountable to educators to stimulate students to actively learn both individually and in groups. Recitation has several objectives such as: (1) deepening students' understanding of the lessons that have been received, (2) training students toward independent learning, (3) enabling students to utilize wasted time to complete assignments, (4) training students to find the right ways to complete tasks for themselves, and (5) enriching experiences at school through activities outside the classroom. (Hamdayama 2014).

This phase 4 activity can be carried out offline, online, and/or the combination of both. If done virtually, you can use virtual collaboration. Because of the COVID-19 pandemic, virtual collaboration has often been used in the world of business, industry, and universities. The emergence of work from home, virtual collaboration, and various related jobs based online raise the possibility that work can be done virtually in the future. However, not all work can be done virtually. In conducting virtual collaboration, currently, many applications exist to support virtual work, commonly referred to as virtual collaboration tools, some of which can be used in working virtually, including Video Conferencing Software and File Sharing Software. Through Video Conferencing Software, much communication occurs in nonverbal forms, such as seeing the expressions, movements, and postures of others. Seeing each other and interacting directly adds intimacy and trust in communication, either in written words or through voice calls will never really be conveyed. So in doing a virtual collaboration, it is necessary to have video conferencing software such as Zoom, Google Meet, and Skype, as well as virtual communication media. Video conferencing in working virtually is very important for collaboration at work. Regular meetings can be done even though working remotely.

In conducting video conferences, you can still “share screen” to present what will be conveyed during the meeting. In virtual collaboration, in addition to important communication between colleagues, there is a need for various documents between colleagues. Of course, in working, you must provide reports to your boss or supporting documents that other teams need. File-sharing software can be used to share documents in virtual collaboration such as Google Drive, Dropbox, and Microsoft 365. Storing documents in soft files and stored in the cloud was done before the COVID-19 pandemic was attacked. This is very effective and efficient because it is paperless, facilitates search, and can store many documents without taking up much space. For a visualization, see Figure 5. The video conferencing tool “Adobe Connect” is the online classroom setting. Here we can work in more significant and smaller groups through breakout rooms. Figure 5 shows a screenshot of our latest kick-off meeting.

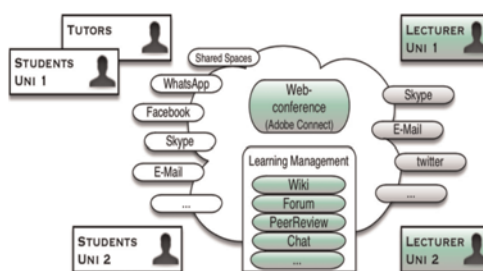


Figure 5. Virtual collaborative learning – cross teaching. Source: <https://crossteaching.org/research/virtual-collaborative-learning/>

The assessment is carried out by combining three aspects, that is, knowledge, skills, and attitudes. Exams, documents, or reports can assess the results of knowledge construction.

Skills assessment can be measured by mastery of learning aids, software, hardware, and design and testing skills. Meanwhile, the assessment of attitudes is focused on mastering soft skills, namely activeness and participation in the team, skills to work collaboratively, and presence in learning. The teacher determines the weight of the three aspects.

## 4 CONCLUSION

At this time, Education has undergone significant changes, and schools have from offline to online and blended learning is used as one of the efforts to innovate learning. Educators are one of many sources of information. Online learning resources greatly facilitate learners and can be accessed quickly. The forms vary from text-based ones packaged in e-journals, e-books, and audio-visual-based ones such as Youtube and other learning resources. This is a new era, namely the “era of infinite learning” without being bound by resources, space, distance, and time that is different from the previous way of learning, which was limited by the walls of schools or campuses, using learning resources from books and educators. This has the opportunity to create learning that arises naturally. Students can be accommodated to learn anytime and anywhere according to their wishes or the learning mood of the students. Educators are required to be able to adapt to technological advances and be able to provide innovations in the learning process.

Considering learning now and in the future, it is time for students to determine when and where they will learn. In addition, the desire or emotional mood to learn everyone can occur anytime and anywhere. We can mention keywords for future Education: flexible, open, varied, access, virtual reality, internet, multimedia, multiple pathways, equal opportunity, lifetime, sharing, interactivity, networking, remote, online, two-direction or dialogical, timely, integrated, collaborative, interdisciplinary, appropriate, multidisciplinary, and competitive. All of this implies that future challenges will be in the form of how to use new technologies wisely and appropriately to respond to global needs. Future learning in the digital era applies learning technology innovations such as pedagogy, seamless learning, blended learning, online learning, and mobile learning. With the development and advancement of learning technology in the future, teaching staff (teachers, lecturers, and widyaiswara) must be more creative, innovative, and proficient in using digital technology. Students are prepared to learn how to learn and can develop their potential to adapt to the development of civilization and collaborate globally.

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# Virtual math lab: A guide to compiling math word problems

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**ABSTRACT:** The virtual mathematics laboratory is a virtual laboratory where elementary school teacher education students can access a variety of mathematics learning applications. The goal of this research is to use one of the virtual mathematics laboratory applications as a guide in compiling math story questions for elementary school teacher education students. The descriptive qualitative method was used, with data collected through observation and interviews. According to the findings of this study, students can compose mathematical story problems based on realistic mathematics using the Polya stages of problem-solving, namely understanding the problem, devising a plan, carrying out the plan, and looking back at the results of their work.

## 1 INTRODUCTION

During the pandemic, all activities are completed online. One of the consequences is the absence of laboratory activities performed by students. Meanwhile, students must continue to be innovative in developing learning media, particularly those based online, to meet needs during the pandemic. Students developed an android-based learning media that can be played at home as one of their innovations. Some online media, particularly Android, can be stored in a database known as a virtual laboratory. The general public, not just elementary school teacher education students, can access all types of online-based media or applications embedded in this virtual laboratory.

There are several courses in the elementary school teacher education department, including Numbers and Data Processing, Geometry and Measurement, Mathematics Learning in Elementary Schools, and Ethnomathematics-based RME. The four courses are closely related; even when teaching mathematical theory, a prospective teacher must also learn to use learning media. This is consistent with Jean Piaget's observation that children aged 7-12 years are in the concrete operational stage of elementary mathematics [1]. Furthermore, some abstract mathematical concepts will be easier to convey if a visualization that students can feel with their eyes, such as learning media, is used [2].

Math word problems are one of the math topics that students avoid in elementary school [3]. This is due to students' difficulty understanding the problems contained in the word problems [4]. Furthermore, students believe that they lack an understanding of the stages of hanging that must be completed in order to solve problems in story questions [5]. Moreover, the word problems presented must be relevant to everyday life so that students understand that this is a problem that can be solved because it is relevant to the contextual real world [6], [7].

However, based on observations and assessments of elementary school teacher education students' ability to create math word problems, particularly those based on realistic mathematics, it can still be stated that there are many shortcomings, which can be seen when it is associated with the stages based on the iceberg theory [8]. Based on preliminary observations of realistic mathematics-based math word problems compiled by elementary school teacher

education students, it was discovered that students still had difficulty making problems based on real-world context and that students also had difficulty modeling problems into mathematical language. This is one of the reasons why a student finds it difficult to solve math word problems.

There is a mathematics learning game application called “labyrinth adventure” in the virtual mathematics laboratory owned by the elementary school teacher education department that presents math word problems based on realistic mathematics and is solved by solving problems based on Polya stages, namely understanding the problem, devise a plan, carry out the plane, and looking back the results of their work. Armed with the findings of observations concerning students’ difficulties in compiling math word problems based on realistic mathematics and the facilities available, namely a virtual mathematics laboratory with a mathematics learning game application containing realistic math-based math word problems and problem-solving, a study was designed to describe the use of a virtual mathematics laboratory as a student guide in compiling math word problems.

## 2 METHOD

This study employs a qualitative approach, with two sampling techniques, convenience, and snowball, as described by [9]. Convenience sampling is a sampling technique based on convenience; when selecting samples, researchers have no other considerations other than convenience. However, if it is felt that the data collected is insufficient, a snowball sampling technique will be used, in which the researcher will look for other parties related to the research focus using a sample reference. The samples collected will continue to grow from one party to the next until the data obtained is complete and comprehensive.

The problem under investigation in this study is the creation of realistic math-based word problems using a virtual mathematics laboratory specializing in elementary school teacher education. This study is a qualitative descriptive study that describes the conditions and facts in the field during the research process in words or in a descriptive manner.

The data in this study are field facts about the process of compiling realistic math-based word problems using virtual mathematics laboratories for elementary school teacher education. Researchers have three types of data sources: person, place, and paper. A person is a data source in the form of people, students majoring in elementary school teacher education at the faculty of education Universitas Negeri Surabaya, even semester 2021/2022 - odd semester 2022/2023 academic year. The department of elementary school teacher education, faculty of education, Universitas Negeri Surabaya, is a data source in the form of place.

The following methods were used to collect data in this study: observation and interview. In this study, checking the validity of the data is used to ensure the accuracy of the information obtained. The technique employed refers to Moleong’s point of view [10], namely: credibility, Transferability, Dependability, and Confirmability.

## 3 RESULTS AND DISCUSSION

### 3.1 *Results*

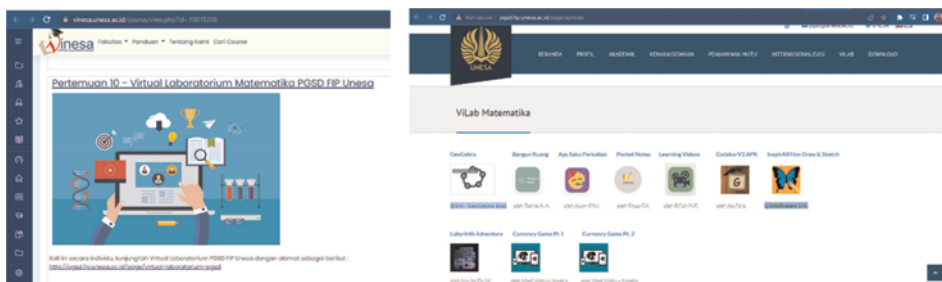
The learning process was carried out by the researcher in the Elementary Mathematics Learning course for elementary school teacher education students. According to the course description, “this course provides students with knowledge of learning the concept of numbers in elementary school, including number operations, place values, Greatest common divisor, Least common multiple, and fractions, learning geometry and measurement, and learning data processing in elementary schools, using ethnomathematics and a realistic

mathematics contextual approach.” The group project-based learning process includes activities that investigate the cultural context of the concept of learning mathematics, both individually and in groups, as well as designing ethnomathematical-based learning using the realistic mathematics approach and its simulations. Mid-semester exams, end-of-semester exams, independent assignments, group assignments, and class activities are all used to assess learning outcomes.

As a result, in this lecture, students will be directed to create realistic mathematics-based word problems by going through the following stages: 1) Students receive instructions via the platform ‘Vinesa’ to access the mathematics virtual laboratory of elementary school teacher education; 2) through the mathematics virtual laboratory of elementary school teacher education, students open an application titled “Labyrinth Adventure” and install it on their respective smartphones; 3) Students play games on their smartphones and comprehend the stages of realistic mathematics-based word problems; 4) Students prepare word problems based on realistic mathematics.

The following are the stages carried out in the research process:

Students are directed to the mathematics virtual laboratory of elementary school teacher education via the platform ‘Vinesa’. Students carry out the lecture process through the



Picture 1. Vinesa preview - The mathematics virtual laboratory of elementary school teacher education.

platform ‘Vinesa’ and students were directed to open the mathematics virtual laboratory of elementary school teacher education through vinesa at the 10th meeting.

There is a link to the mathematics virtual laboratory of elementary school teacher education after students have successfully entered vinesa and opened the 10th meeting. Students can also download a user guide for the virtual laboratory, which is also embedded in vinesa.

- (a) Students download and install the “Labyrinth Adventure” app on their respective smartphones.

Students will find several applications for learning mathematics after entering the virtual laboratory of elementary school teacher education and then heading to the mathematics virtual laboratory of elementary school teacher education. The students are then instructed to download and install the “Labyrinth Adventure” app on their smartphones. This application is a realistic mathematics-based mathematics learning game application developed by elementary school teacher education students that employ the Polya problem-solving stage.

- (b) Students use their smartphones to play games and learn the stages of realistic mathematics-based word problems.

After installing the application on each student’s smartphone, the student attempts to play the game.





Picture 2. Students playing the math game “Labyrinth Adventure”.

Students begin to play the math game “Labyrinth Adventure” and begin to understand the stages of problem-solving from realistic mathematics-based word problems. Students comprehend the steps of word problems that are solved using Polya’s stages by analyzing whether the stages of the game design correspond to Polya’s problem-solving stages.

• Analisis Persoalan dalam Game Berdasarkan Tahapan Polya

No.	Dokumentasi Bagian Soal	Tahapan Polya
1.		<p><b>Masalah yang harus diselesaikan (<i>The Problem</i>)</b></p>

Picture 3. Students analyze problems in games.

Students begin to analyze the problems presented in the game to see if they correspond to Polya’s stages of problem-solving. Students analyze one by one, beginning with understanding the problem, devising a plan, carrying out the plan, and looking back at the results of their work. Students use the game’s questions to check the adequacy of Polya’s steps. as shown in the picture below:

After the students have successfully completed the game and analyzed whether the problems in the game correspond to the Polya stages of problem-solving, the next step is for students to attempt to create math word problems based on realistic mathematics,

	<p><b>Melihat Kembali (Look Back)</b></p> <p>Pada tahap ini, siswa mengecek dan mengoreksi kembali jawaban mereka apakah sesuai dengan ketentuan dan tidak terjadi kontradiksi dengan yang ditanyakan. Kemudian menyelesaikan masalah.</p> <p>Ditulis sebagai berikut:</p> <p><b>Pembuktian:</b>  Sisi = 30 m  Panjang = 20 m  Lebar = 10 m  Luas Tanah = <math>s \times s</math>  = <math>30 \text{ m} \times 30 \text{ m}</math>  = <math>900 \text{ m}^2</math>  Luas Tanah = <math>s \times s</math>  = <math>30 \text{ m} \times 30 \text{ m}</math>  = <math>900 \text{ m}^2</math>  Luas Kolam = <math>p \times l</math>  = <math>20 \text{ m} \times 10 \text{ m}</math>  = <math>200 \text{ m}^2</math>  Sisa Tanah = L. Tanah - L. Kolam  = <math>900 \text{ m}^2 - 200 \text{ m}^2</math>  = <math>700 \text{ m}^2</math>  L.T. = L.K. + Sisa Tanah  <math>900 \text{ m}^2 = 200 \text{ m}^2 + 700 \text{ m}^2</math>  <math>900 \text{ m}^2 = 900 \text{ m}^2</math>  <b>(TERBUKTI BENAR)</b>  Jadi, sisa tanah Pak Made adalah <math>700 \text{ m}^2</math></p>		<p><b>Memahami Masalah (Understanding the Problem)</b></p> <p>Pada tahap ini siswa diberi persoalan yang mengarahkan mereka untuk melihat point utama soal yang akan memudahkan mereka memahami masalah. Pada tahap ini siswa menetapkan apa yang diketahui dan permasalahan apa yang ditanyakan.</p>
	<p><b>Menyusun Rencana Penyelesaian Masalah (Devise a Plan)</b></p> <p>Pada tahap ini, siswa mengidentifikasi strategi atau cara pemecahan masalah untuk menyelesaikan masalah pada soal tersebut.</p> <p>Dapat dituliskan sebagai berikut:</p> <ul style="list-style-type: none"> <li>Menghitung luas tanah (luas persegi)</li> <li>Luas Tanah = <math>s \times s</math></li> <li>Menghitung luas kolam (luas persegi panjang)</li> </ul>		
	<p><b>Melakukan Rencana Penyelesaian Masalah (Carry Out the Plan)</b></p> <p>Pada tahap ini, siswa melaksanakan penyelesaian soal sesuai dengan yang telah direncanakan pada tahap sebelumnya.</p> <p>Dapat dituliskan sebagai berikut:</p> <ul style="list-style-type: none"> <li>Menghitung luas tanah (luas persegi)</li> </ul>		

Picture 4. Students analyze problems in games based on Polya stages.

along with solutions that are adapted to the Polya stages and the realistic mathematics iceberg theory.

(c) Based on realistic mathematics, students create math word problems.

After analyzing the game's word problems and discovering the characteristics of realistic mathematics-based word problems and problem-solving stages, the students compiled realistic Mathematica-based word problems. The researcher also conducted interviews and confirmed with students whether the prepared word problems were in accordance with realistic mathematical concepts and whether the solutions were in accordance with the Polya stages.



Picture 5. Researchers conduct interviews and provide confirmation to students.

### 3.2 Discussions

The implementation of the use of mathematics virtual laboratories demonstrates that it is capable of providing benefits to students in accessing several learning media applications, particularly mathematics. In this case, it is a mathematics learning game application called

“Labyrinth Adventure” that guides students through the process of compiling realistic mathematics-based word problems.

The use of virtual student laboratories has a positive impact, particularly during the pandemic and transition to endemic, so that direct activities in the laboratory are still limited, according to the opinion [11], [12] who stressed the importance of using a virtual laboratory during a pandemic that functions like a real laboratory for students to learn.

Several learning applications that can be accessed online or offline in the virtual laboratory allow students to continue studying the material even when they are at home [13]. The utilization of applications that students can access from their homes can still provide information that students should obtain while on campus [14], [15].

Students can compose their own realistic math-based word problems based on iceberg theory after completing the game and analyzing the word problems contained in the mathematics learning game “Labyrinth Adventure.” This is in line with what was conveyed by [8] Specifically, word problems can encourage students to understand the context of the story, model the context of the story into a student description, model the description toward completion, and finally bring it into the language of mathematics to solve the problem. Students’ story questions are also story questions that can be solved using Polya’s theory of problem-solving stages, namely understanding the problem, devising a plan, carrying out the plan, and looking back [16].

#### 4 CONCLUSION

Virtual laboratories can provide benefits and have a positive impact on students, particularly during the learning process during a pandemic, when students are unable to use physical laboratories on campus. Access to a variety of learning applications, particularly mathematics embedded in virtual laboratories, allows students to study material even when they are at home. One application of a “labyrinth adventure” mathematics learning game can be a guide or guide for students in compiling realistic math-based word problems.

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## Development of Islamic guidance and counseling applications to improve self-efficacy of students

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**ABSTRACT:** Most of the problems of students in Islamic boarding schools are communicated to their peers or Kyai/Nyai. In contrast, the role of guidance and counseling teachers in dealing with student problems at Islamic boarding schools is still very minimal. Therefore, a reference is needed to carry out guidance and counseling. In addition, the initial problems when students have just entered Islamic boarding schools are dominated by poor adaptation, lack of self-confidence, lack of solid commitment, and feeling of isolation, so an increase in self-efficacy is needed. In this regard, this research aims to produce the application of Islamic guidance and counseling (BKI) to increase students' self-efficacy. This development is carried out because students need to carry out self-development tasks in the personal, social, academic, and career fields using applications that are easy to use anytime and anywhere. Application development is based on the need assessment of students and then develops BKI materials in the android application. ADDIE (i.e., Analysis, Design, Development or Production, Implementation or Delivery, and Evaluations) development research method consists of steps to create a product, test material experts, and make product revisions.

### 1 INTRODUCTION

Self-efficacy is a sense of success in one's ability to succeed in the future (Alaee et al. 2022). Individuals can estimate the ability to achieve the desired target in Islamic boarding schools (Anggadwita et al. 2021). Self-efficacy is essential for a person to measure his abilities when completing specific tasks. Self-efficacy helps students to be able to make predictions in order to make the best targets for academic performance (Islamiyah et al. 2018). However, not all students can have high self-efficacy. There are still problems in solving students' daily problems.

The Islamic boarding school environment requires rapid guidance and counseling services to manage hundreds of students who study in Islamic boarding schools. The use of technology is developed for the delivery of information services (Ed et al. 2021). Information can use media applications via Android. In-app materials on mobile make it easy to integrate materials within reach of students and parents (Maphosa & Dube 2021). Guidance and counseling materials are at hand with mobile-phone technology based on Android. The use of cell phones in Islamic boarding schools is strictly limited and regulated by the administrators (Rohaeni et al. 2021). The use of cell phones is allowed on holidays (Schlosser et al. 2020). However, there are also Islamic boarding schools that strictly not allowed to use cell phones while in Islamic boarding schools (Bajari et al. 2019).

Students can use cell phones at home and school. Students at boarding schools carry cell phones for online exams. After the pandemic, learning in Islamic boarding schools is partially offline and hybrid. The need for students to obtain information about guidance and counseling becomes relevant by using an android application (Bhakti & Rahman 2020). The application can be used anytime and anywhere during free time or school holidays. Santri can access BKI materials through cell phones that have an internet connection.

The use of mobile phones is very high among millennial children ([www.kominfo.go.id](http://www.kominfo.go.id)). Indonesia is one of the largest internet users country (Zubaidah & Afifah 2020). They use the internet to access social media, online games, YouTube, online shopping, and find information through Google. The development of Islamic guidance and counseling applications has the opportunity to reach students who are teenagers (Fadilah et al. 2020). This is to increase self-efficacy (Gilbert et al. 2018).

Research results in Islamic boarding schools are bullying-related problems, wanting to move to board schools because of queuing, poor sanitation, boredom with cottage activities, often being sleepy at school due to poor time management, and unfulfilled facilities. Uniquely, many students feel that they have succeeded in living in Islamic boarding schools with all their limitations. The role of Kiai/Nyai as a substitute for parents helps students increase self-efficacy. The role of peers also increases students' self-efficacy (Punna et al. 2021).

The problem is that students who have low self-efficacy show little performance. The characteristics of low self-efficacy indicate that students are not ready to learn, unable to adapt, are not mastering information technology, and will have difficulties in learning. Santri is hesitant, silent, and confused about choosing further studies (Astuti & Wiyatmi 2020). The inability of students to make decisions for further studies because they need to know their potential. Characteristics of students in learning are interrelated with motivation, stress, procrastination, and self-efficacy (Sage et al. 2021). This requires the counselor's attention (Kwon et al. 2022). Counselors need to have technological competence to motivate students.

Meanwhile, counselors at Islamic boarding schools need to be more skilled at directing students to find their passion and talents. Efforts to make applications can provide media to counselors in Islamic boarding schools and students to obtain information (Bahiroh & M. Suud 2020). Reading guidance and counseling materials through applications increases self-efficacy. Reading and actively participating in communication skills training for school counselors can increase school counselors' sense of success (Shahnazi et al. 2021). In later application development, a review will be developed to train communication skills as skills used by counselors with students (Gutiérrez-Puertas et al. 2020). Application media can help students discover their self-efficacy and get guidance on increasing self-efficacy in the personal, social, academic, and career fields. Interviews about needs and listening to complaints so they can understand and help prepare Islamic guidance and counseling materials. The BKI santri application can help students to start solving their problems. Students with high efficacy will develop ways to help themselves and develop respectfully and skillfully in correctly choosing the materials in the BKI application so that students feel satisfied.

## 2 METHOD

The type of research applied in this research is the development method. This development method uses the ADDIE (Analysis, Design, Development or Production, Implementation or Delivery, and Evaluations) model. The data analysis technique used in this development research uses quantitative and qualitative data analysis. The following is an explanation of the data analysis techniques used.

## 2.1 *Qualitative data analysis*

The steps used are to analyze the results of interviews and observations made previously. In application development, qualitative data is obtained from criticism and suggestions from examiners to be used as input during product manufacture. Qualitative data in the form of descriptions can be interpreted and concluded as appropriate according to the data in the field.

## 2.2 *Quantitative data analysis*

According to Arikunto, data analysis is closely related to the formulation of the problem proposed to conclude from the results of development research (Arikunto 2010). In this case, the data to be obtained is in the form of quantitative data originating from the assessment questionnaire that has been given to the validation expert test and user expert and qualitative data originating from various inputs, additions, criticisms, and suggestions obtained from the assessment questionnaire given to the expert test: media and linguists.

# 3 FINDINGS AND DISCUSSION

## 3.1 *Result*

This research also developed 40 questions explained on the grid and then distributed them to 105 students. After that, the validity test was carried out for each item in the questionnaire. After testing the validity of the statement items. The development of this application involves several tests, including the Material Expert Test and the Language Expert Test.

The results of the material expert test stated that the material contained in the BKI application was feasible to be applied to students. The aspects tested are functionality, usability, and portability. Media expert test was also carried out, which involved the following aspects: compatibility aspect; security aspect; interoperability aspect; aspect of time behavior; aspects of resource behavior. Based on the material test results above, this BKI application has passed the media and material expert test, so this application is feasible to use for students as an effort to increase Self Efficacy.

## 3.2 *Discussion*

Boarding schools or Islamic boarding schools are an alternative for parents. Parents feel calm if their children are in an environment that receives religious education and science education. Parents play a role in educating and motivating children. The results showed that parental awareness was indirectly related to children's internalizing and externalizing behavior through caring and positive parenting practices. At the same time, this pathway was not significant through harmful parenting practices (Han et al. 2021). Children who study in Islamic boarding schools are visited by their parents from time to time. Parents can establish communication with Kiai/Nyai to develop their children in the cottage. The synergy between parents and boarding school caregivers will help children live independently with peers seeking knowledge away from their parents. The role of parents is replaced by Kiai/Nyai and teachers at Islamic boarding schools. Parents and Kiai/Nyai can access the BKI application, which was developed to increase parents' sense of success in parenting (parenting efficacy).

Self-efficacy is generally a psychological attribute that shows confidence in one's ability to meet challenges and find solutions to problems (Hamann et al. 2022). Most of the students' problems in carrying out the direct practice of religiosity and spirituality in Islamic boarding schools were conveyed to their peers, teachers, and Kiai/Nyai at the boarding school. Some students feel confident that they will successfully engage in religiosity and spirituality. This

comes from their direct experience of doing daily worship activities. They perform religious duties, healthy and clean life skills, independent study, and self-management to comply with the rules of the Islamic boarding school. It takes work, a strong belief, and effort to carry out developmental tasks independently.

On the other hand, students who are hesitant and pessimistic will feel heavy and burdened in the cottage. They will be weak and helpless and make less effort to achieve achievement. They are reluctant to think ahead, are afraid to dream, and feel abandoned by home. They often complain, want to sleep, and are often sick and not actively attending school. Their life is not happy and sad, so their performance is low. His youth was spent in vain; his free time was of no use, sleeping frequently and his efforts little for worship. They do not know their ideals and are desperate. Students who have low self-efficacy need to be assisted with Islamic guidance and counseling based on Islamic boarding schools. One way is to develop applications that have become the needs of today's millennial generation.

The development of guidance and counseling applications will make it easier for students to read ways to increase self-efficacy (a sense of success) in the personal, social, learning, and career fields. This application is helpful for students to read and do self-evaluation. Self-evaluation using the results of the questionnaire data to try to reflect on yourself and plan for improvement. Likewise, a collaborative and systematic process by conducting school interviews to improve aspects of teaching and learning (Brown et al. 2021).

Students who experience doubts seek positive self-identity to identify positive achievements achieved according to students' talents and interests. Students need to develop in a positive direction by guiding positive achievements that will strengthen energy and efforts to achieve positive identities from childhood to early adolescence and late adolescence—learning time to improve self-ability needs to be facilitated by providing information to change behavior for the better.

The Guidance and Counseling application will be helpful for students, parents, Kyai/Nyai, and BK teachers to guide students according to the values of the Qur'an and al-hadith. The BKI (Islamic Guidance and Counseling) application contains a student self-efficacy questionnaire and guidance on increasing self-efficacy based on the selection of verses from the Koran that match the theme of self-efficacy. Then the sahih hadiths that explain self-efficacy, explanations of the yellow books in the form of opinions of the companions of the Prophet Muhammad SAW, and the tabi'in increase self-efficacy in the personal, social, study, and career fields. Students' self-efficacy will identify their pride as students, enjoy learning science, self-confidence, ability above their peers, and performance.

Students can access the BKI application anytime and anywhere. This will help students by looking at self-identification, self-efficacy, and ways to improve themselves through guidance and counseling materials. BK teachers in Islamic boarding schools can help provide BKI materials regularly so BKI applications can be relevant according to student needs. BK teachers can provide material through applications that students can approach anytime and anywhere.

#### 4 CONCLUSION

The role of guidance and counseling teachers is still very minimal in Islamic boarding schools, so efforts are needed to provide services to students. Other problems experienced by students involve the problem of lack of adaptation, lack of self-confidence, lack of commitment, and feelings of being excluded, so self-efficacy needs to be improved. In this context, this research aims to develop an application of Islamic Guidance and Counseling (BKI) to improve students' self-efficacy. This application can help students and teachers of guidance and counseling to deliver services to make it easier to use anytime, anywhere. Application development is based on analyzing student needs and developing BKI materials in Android applications. ADDIE research and development methods were used, including



product manufacturing steps, material and media expert testing, and product revision. The results show that this application is feasible for students to increase student self-efficacy.

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## Non-locomotor movement manipulatives in Bocce sports learning for students with intellectual disabilities

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**ABSTRACT:** This study aims to improve the non-locomotor movement abilities of students with intellectual disabilities of Down syndrome type. Meanwhile, in order to determine the increase in non-locomotor movement abilities, a biomechanics-based measuring instrument must be developed. The development of this non-locomotor biomechanical evaluation tool can be used as a series of waterfall modeling with five working steps: (1) needs of analysis, (2) system design, (3) program writing, (4) testing, and (5) implementation. This research comprises three phases: application development, expert validation, and limited trial. To determine the feasibility of the instrumentation dimensions of the evaluation tool and its use, it was validated by expert partners from Taiwan's National Dong Hwa University with testable results. The application of Bocce exercise learning to determine the ability of students with intellectual disabilities through the normality test revealed no significant differences in pretest-posttest ball throwing, adduction-abduction, flexion-extension, or internal-external rotation. The results of the normality test analysis between students are the same, even though non-locomotor movement manipulatives have been used in learning Bocce sports for students with Down syndrome in special schools. The analysis of the different paired sample tests revealed that six data showed no significant difference between the pre-test and post-test of throwing the distance between the jack and the ball, adduction-abduction, flexion-extension, and external rotation. Even though the test analyses were different, 1 data point in the paired sample test showed a significant difference between the results before and after the internal rotation motion test, but no significant difference was found.

### 1 INTRODUCTION

Bocce sports are explicitly designed for children with intellectual disabilities or mental retardation (Fitzgerald 2009). Bocce has been widely used in special schools/special schools in Indonesia over the last decade. There are currently 38,522 students in special schools with intellectual disabilities and 4,506 students with Down syndrome (Dapodik Ministry of Education 2021).

The main barrier for developmentally disabled children is their low intellectual ability, whereas children with Down syndrome have chromosomal abnormalities. Because children with Down syndrome almost always have intellectual disabilities, they are also classified as children with intellectual disabilities (Ashworth et al. 2019; Beighton & Wills 2019; Embregts et al. 2021; Schnepel & Aunio 2022). Some believe that the quality of the player's non-locomotor movement abilities, specifically the movement of swinging hands in a static

position when throwing the ball toward the target, is the leading indicator of the Bocce game (Dapodik Ministry of Education 2021). As a result, in Bocce sports learning, in addition to manipulative activities that improve non-locomotor movement abilities, measuring tools must be developed so that the manipulative activities given to students become measurable (Djumijar 2004).

Humans, as social beings, cannot exist apart from their interactions with other humans. Humans must have basic skills to interact, communicate, solve problems, and place themselves in the appropriate environment to live a social life. These fundamental abilities are known as “social skills” or “social abilities.” Social skills are the ability to interact with others in a social context in a specific way that is socially acceptable or valued and benefits others. Bailey (2004), defines social skills as “the degree to which students can establish and maintain satisfactory interpersonal relationships, gain peer acceptance, establish and maintain friendships, and terminate negative or pernicious interpersonal relationships,” which means social skills are the ability to build and maintain satisfying interpersonal relationships, gain acceptance from others, build and maintain relationships, and terminate toxic or destructive interpersonal relationships.

Non-locomotor movement measuring instruments based on biomechanics, and on the essence of natural movement, can be developed using existing theoretical concepts (Bremer & Smith 2004). Furthermore, on the operational dimension, the measuring instrument developed must be easily usable by teachers in general so that learning activities are independent of the presence or absence of professionals in the biomedical field (Sperrle et al. 2021; Yahya 2022).

Bocce is a recreational sport in which two teams of three to four people start competing. This game was created in Indonesia for people with intellectual disabilities (Bremer & Smith 2004). Nevertheless, it has grown in popularity and competition in other parts of the world. This sport can be combined with a variety of fun games. There are three types of balls in the Bocce game, each of which is small, medium, or large and comes in various attractive colors (Barnes et al. 2020; Barnes & Watkins 2022; Pfeiffer et al. 2019). As a goal, a small ball is placed in an area or on a grass field. The pitch for throwing the ball has a limit. Two teams, or teams facing each other, compete to hit or approach the target with a large ball. A point is awarded to the team if the pitcher can throw a large ball near the target.

When throwing a large ball, the thrower should bend down at about 45 degrees, with the left foot in front and the right foot behind. The thrower takes one step forward when throwing the ball. This position and movement are analogous to tossing a bowling ball. The thrower is not permitted to throw the ball while standing. If it is done, it is considered a mistake and will cost the opposing team points. Bocce is a combination of games and body movements that are beneficial for stimulating the nerves and motor movements of the body. This game can help you improve your hand and foot motor skills, concentration, and social and teamwork skills (Beirne-Smith et al. 2006). When throwing the ball, the body position and movement train the flexibility of the back muscles, hands, and feet (Preeti et al. 2019). This study aims to improve the non-locomotor movement abilities of students with Down syndrome-type intellectual disabilities while developing an appropriate biomechanics-based measuring instrument that is required to determine the increase in non-locomotor movement abilities.

## 2 METHOD

This study’s product trials include the following: This type of waterfall model development research employs five waterfall modeling working steps: (1) needs analysis, (2) system design, (3) program writing, (4) testing, and (5) implementation. This study’s product trials include the following:

### 2.1 *Design of validation test*

This study's non-locomotor movement manipulatives in learning Bocce exercise for students with Down syndrome-type intellectual disabilities in special schools is an instrument design that strives for feasibility. In this case, a series of instrument validation tests were conducted, followed by revisions based on the results of the tests. Expert reviews from international collaborators were used to carry out the validation test.

### 2.2 *Test subject*

In this study, the test subjects were students with intellectual disabilities in special schools, particularly students with Down syndrome in special schools.

### 2.3 *Types of data*

The quantitative data is in the form of information obtained using the pre-test and post-test data assessment instruments for the Bocce sports learning performance results. For this assessment instrument, obtain instrument validation test data assessed by expert international collaborating researchers (National Dong Hwa University, Taiwan) through input, feedback, and suggestions for improvement based on expert validation results.

In this study, a performance test technique was used to collect data. It was used to determine the level of improvement in the ability of students with Down syndrome to learn and practice Bocce sports. Data analysis was used to process the data from the pretest-posttest test results in Bocce sports learning in special schools. This analysis technique employs quantitative descriptive data derived from Bocce performance scores. Furthermore, this quantitative data is used to obtain the Bocce sports learning performance test results. The paired samples t-test statistical formula was used to process data derived from pre-test and post-test scores. The paired samples t-test method is one of the research hypothesis testing methods in which the statistical test results will be used to make decisions about the significance of non-locomotor movement manipulative performance in Bocce exercise learning for students with Down syndrome.

## 3 RESULT AND DISCUSSION

### 3.1 *Results*

The first step in developing this content is to identify the various needs tailored to the conditions of students with Down syndrome so that it follows the main objectives of the research to be achieved. According to the needs analysis process findings, it is necessary to increase non-locomotor movement manipulatives in learning Bocce sports for students as users, particularly when learning Bocce sports in accordance with students' potential.

The first one goes through the initial stages of the non-locomotor movement manipulative content development process by collecting field data from the Harmoni Special School. Harmoni Special School is an educational and social foundation that accepts and educates students with special needs for mental retardation. One of the students taught at Harmoni particular school has Down syndrome and could be educated and developed.

In this content stage, mainstreaming examines the needs of students with Down syndrome who are learning Bocce sports in special schools. The analysis was performed as a preliminary step in determining the health of students with Down syndrome. At this stage, an analysis of the field conditions was carried out in observations at special schools for mental retardation and to identify the characteristics and needs of students with their differences. The various field findings are a step toward preparing Bocce sports learning materials, which are rarely taught in schools.

The initial ability analysis is performed on students with special needs (baseline). This is accomplished through student recruitment, movement skills training with the physical strength of Down syndrome students, and independent readiness in anticipating the nature of being dependent on others, particularly teachers. In analyzing the needs of students with Down syndrome on movement skills with physical strength and independent readiness, they anticipate the characteristics of students who rely on others, particularly the teacher. Through initial assessment during performance implementation, we develop non-locomotor movement manipulative content in Bocce sports learning for Down syndrome students with intellectual disabilities in special schools.

The application refers to an instrument design in the program system contained in the physical motion measurement detection scaffold for athletes and sportswomen based on a needs analysis in Bocce sports learning for students with Down syndrome and intellectual disabilities. A program menu to measure the strength of physical motion is available in the detection tool's scaffolding. Furthermore, a real-time chat facility is added to make it simple for users to get help using information relevant to their competence, namely Bocce sports experts. Bocce sports are a design development for students with Down syndrome who have intellectual disabilities.

The Bocce exercise learning guide design for students with intellectual disabilities and Down syndrome was validated by content experts from Taiwan NDHU collaborators via focus group discussions with the online postgraduate pedagogic research team. This activity was carried out to gather feedback for revising the Bocce learning guide design product. The cover image and contents of the Bocce learning guide design product for students with Down syndrome and intellectual disabilities are shown in Figure 1.



Figure 1. The cover image and content of the Bocce learning guide design product.

Content experts give the Bocce learning guide high marks for its usefulness for students with intellectual disabilities who have Down syndrome. Overall, the total score of the aspects assessed, that is, a) product size design, b) cover design, c) content design,

In these three aspects, there are 47 statement items with a score of 186 based on content expert assessment, 45 items with a value of 4 (very feasible), and two items with a value of 3.0 (adequate). This demonstrates that the Bocce Learning non-locomotor movement manipulative guide for students with intellectual disabilities who have Down syndrome meets the perfect criteria. This means that the Bocce Learning non-locomotor movement manipulative guide product can be used further by potential users.

Similarly, the content expert's opinion on the usefulness of Bocce's non-locomotor movement manipulative guidelines for learning refers to the value of the design aspect of the contents of the Bocce learning guide when applied to students with intellectual disabilities and Down syndrome, with an acquisition score of 114 based on 27 items with a value of 4 (very feasible) and two items with a value of 3 (adequate). This means that the non-locomotor movement manipulative guide product for Bocce learning for students with intellectual disabilities who have Down syndrome is essential. Furthermore, in terms of the number of teachers required for Bocce learning, as designed in the non-locomotor movement manipulative guide, Bocce learning is very relevant in teaching students with intellectual disabilities who have Down syndrome.

The results of the data collection were then analyzed statistically. 1) Testing the normality of the ball throwing data; adduction-abduction, flexion-extension, internal-external rotation, and squats; and 2) testing the jack and ball distance, adduction-abduction, flexion-extension, internal-external rotation, and squats pre-test and post-test data. The results of data analysis to test the normality of throwing data, adduction-abduction, flexion-extension, and internal-external rotation of non-locomotor movement manipulatives in Bocce sports learning for students with Down syndrome and intellectual disabilities.

Based on the results of the normality test between the pre-test and post-test ball throwing,  $t = 0.062$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the ball-throwing test. The normality test results between pre-test and post-test adduction  $t = 0.062$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the adduction test. Furthermore, the normality test results between pre-test and post-test abduction were  $t = 0.098$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the abduction test. Then, the normality test results between pre-test and post-test flexion  $t = 0.113$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the flexion test. While the results of the normality test between pre-test and post-test extension were  $t = 0.010$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the extension test. The normality test results between pre-test and post-test internal rotation were  $t = 0.010$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the internal rotation test. And the results of the normality test between the pretest-posttest external rotation test  $t = 0.065$  with a significance of  $0.00 > 0.05$ . This shows no significant difference in the results before and after the external rotation motion test. Thus, it can be concluded that the normality test results showed no significant differences between pre-test and post-test ball throwing, adduction abduction, flexion-extension, or internal-external rotation.

Analysis of test data between pre-test and post-test of jack and ball distance, adduction-abduction, flexion-extension, internal-external rotation, and squats on non-locomotor movement manipulative in Bocce exercise learning for students with Down syndrome and intellectual disabilities is provided.

Based on the test data analysis, the paired sample test was different between the pre-test and post-test of throwing the distance between the jack and the ball,  $t = 1.959$ , with a significance of  $0.00 > 0.05$ . This shows no significant difference in the results before and after the jack and ball distance tests. The results of the paired sample test difference between the pretest-posttest adduction motion  $t = 0.136$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the adduction test. Furthermore, the results of the analysis of the different paired sample tests between the pre-test and post-test abduction motion  $t = 4.581$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the abduction test. Then, the results of the analysis of the different paired sample tests between the pre-test and post-test flexion motion  $t = 4.105$  with a significance of  $0.00 > 0.05$ . This also shows no significant difference between the results before and after the flexion test. While the results of the analysis of the different

paired sample tests between the pre-test and post-test extension were  $t = 0.840$  with a significance of  $0.00 > 0.05$ . This shows no significant difference between the results before and after the extension test. The results of the analysis of the different paired sample tests between the pre-test and post-test internal rotation were  $t = -2.061$  with a significance of  $0.00 > 0.05$ . The analysis of the different paired sample tests between the pre-test and post-test external rotation motion results in  $t = 0.416$  with a significance of  $0.00 > 0.05$ . This shows no significant difference in the results before and after the external rotation motion test. Thus, the analysis of the paired sample test difference contained six data points, indicating no significant differences between the pre-test and post-test of throwing the distance jack and ball, adduction-abduction, flexion-extension, and external rotation. Meanwhile, the results of the analysis of the different paired sample tests show a significant difference from the results before and after the internal rotation motion test is carried out.

### 3.2 Discussion

This study aims to describe the increase in the manipulative ability of non-locomotor movements in students with intellectual disabilities who are learning Bocce sports. Based on this primary objective, the implementation of this research employs waterfall modeling (Axinte et al. 2017; Teng 2015; TIM PEPARNAS XV 2016) through the use of 1) needs analysis, 2) system design, 3) program development, 4) testing, and 5) implementation.

According to needs analysis from theoretical studies and field findings, Bocce learning is used as a game for students with Down syndrome in special schools. Another factor to consider when it comes to students with special needs who have Down syndrome is that they have behavioral characteristics that necessitate full attention for assistance (Dapodik Ministry of Education 2021; Hallahan et al. 2009). Such characteristics are: a) the preparation procedure is tailored to the needs assessment of students in the learning environment, b) the accuracy of manipulative non-locomotor movements in the learning environment is maintained, c) Bocce sports learning should be conducted in a learning environment, d) the non-locomotor movement manipulative process in Bocce sports learning is carried out homogeneously for Down syndrome students, e) referring to learning resources and strategies for Bocce sports learning activities, and f) when implementing Bocce sports learning assessments, this is carried out in the form of performance tests in the success measurement scale during Bocce sports learning.

This system's design refers to an analysis of needs in Bocce sports learning for students with Down syndrome and intellectual disabilities who differ from regular students (Dapodik Ministry of Education 2021). Regarding this, a design for the Bocce sports learning procedure system was created based on a study of the theory and field conditions of students with special needs. This system design contains a variety of Bocce sports instruments, coaching, and guides for students to figure out how to play Bocce. Furthermore, sports field facilities have been added to make it easier for users to learn based on the abilities of students with Down syndrome and intellectual disabilities.

Furthermore, the results of the application of Bocce sports learning to determine student ability were analyzed using normality tests with a significance of  $0.00 > 0.05$  between pretest-posttest ball throwing  $t = 0.062$ , adduction  $t = 0.062$ , abduction  $t = 0.098$ , flexion  $t = 0.113$ , extension  $t = 0.010$ , internal rotation  $t = 0.010$ , external rotation  $t = 0.065$ . The normality test analysis revealed no significant differences in pretest-posttest ball throwing, adduction-abduction, flexion-extension, or internal-external rotation. Even though non-locomotor movement manipulatives have been used in learning Bocce sports for students with Down syndrome in special schools, the results of the normality test analysis indicate that students with the same physical condition have the same physical condition.

The paired sample test difference between the pre-test and post-test distance throwing jack and ball shows that  $t = 1.959$ , adduction motion  $t = 0.136$ , abduction motion  $t = 4.581$ , flexion motion  $t = 4.105$ , extension  $t = 0.840$ , internal rotation  $t = -2.061$ , external rotation



motion  $t = 0.416$  with a significance of  $0.00 > 0.05$ . This demonstrates no statistically significant difference between the results before and after the test. As a result of the analysis of the different paired sample tests, it can be concluded that there were six data points indicating no significant differences between the pre-test and post-test of throwing the distance jack and ball, adduction abduction, flexion-extension, and external rotation. Even though 1 data point from the analysis of the different paired sample tests showed a significant difference in the results before and after the internal rotation motion test, no significant difference was found. As a result, Thomas & Smith (2009) proposed that manipulative non-locomotor movements in Bocce sports necessitate an evaluation of learning programs in special schools for students with Down syndrome. During this stage, researchers took data from the three different weeks. In the first week, AA was assessed with the frequency recording sheet without getting any digital power cards. Then, while using the Digital Power Cars, the same instrument was used to evaluate AA's behavior, in the last week. During the morning cycle session, AA was observed for about 30 minutes.

#### 4 CONCLUSION

The application of Bocce's exercise learning to determine the ability of students with intellectual disabilities and Down syndrome through the normality test revealed no significant differences between pre-test and post-test in ball throwing, adduction abduction, flexion-extension, and internal-external rotation. Even though non-locomotor movement manipulatives have been used in learning Bocce sports for students with Down syndrome in special schools, the results of the normality test analysis show that students with the same physical condition have the same physical condition. Meanwhile, the analysis of the different paired sample tests revealed that six data showed no significant difference between the pre-test and post-test of throwing the distance between the jack and the ball, adduction-abduction, flexion-extension, and external rotation. Even though the analysis of the paired sample test difference test contained data showing a significant difference between the results before and after the internal rotation motion test, there was still no significant difference.

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# Exploring the development of professional competencies of early childhood pre-service teachers through online practicum experiences

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**ABSTRACT:** Early childhood Pre-service teachers (PSTs) normally carry out their practicum in physical classrooms where they can prepare, organize and implement activities that increase children's active learning, as well as where meaningful developmentally appropriate practices (DAP) are carried out. Unfortunately, PSTs are required to do their teaching practice in online classrooms due to the COVID-19 pandemic. This study aimed to explore how online practicum experiences of early childhood (EC) PSTs facilitate the development of their professional competencies. A qualitative approach using in-depth semi-structured interviews with 8 PSTs was carried out, and the data was then analyzed using thematic analysis. The finding confirmed that the PSTs, to a certain extent, had improved their professional disposition and qualities, professional skills, professional learning, and self-management skills. The finding also highlighted the importance of collaboration with families and support from mentors and preschools for the optimal development of PSTs' professional competencies. This study recommends higher education institutions 1) revisit the teacher training curriculum for developing the professional qualities, digital skills, creativity, and adaptability for technology-integrated teaching, 2) increase the collaboration with practicum centres in order to provide an initial prior field experience for the PSTs before the start of their practicum, 3) train the PSTs in a simulated and virtual learning environment for managing and organizing online teaching and classroom activities. Altogether, this study has contributed to the growing knowledge of preparing professional competencies of teacher trainees for 21st-century teaching.

## 1 INTRODUCTION

This study examined the development of professional competencies among early childhood pre-service teachers during their online practicum during the COVID-19 pandemic. Some researchers describe competence as a combination of a person's knowledge, skills, and behaviour to improve their performance or as their state of being adequately qualified and capable of performing a given role. However, other researchers describe competence by focusing instead on those specific values, traits, and motivations that consistently distinguish

a person's outstanding performance from their typical performance in a given job or role (Mandal 2018; Nessipbayeva 2012).

Professional competencies have been recognized as one of the most important components for teachers to prepare young children for early school adjustment (Weber et al. 2018; Yada et al. 2021). Recognizing that educators' professional competencies are a prerequisite to accommodating the diverse educational needs of young children especially has made the development of this component important in teacher education services. However, the substantial and abrupt changes brought about by the COVID-19 pandemic, where the forceful move from face-to-face teaching and learning activities toward online modes, required teachers to deliver their teaching in virtual classroom environments. This was crucial in ensuring that the delivery of teaching and learning continues without neglecting its quality. Similar to undergraduate teachers worldwide, PSTs in Malaysia experienced undergoing the practicum component of their training in virtual classroom environments during the COVID-19 pandemic. Yet, the extent to which PSTs are equipped with the essential skills required to carry out their practicum virtually is unclear. The current study aimed to explore how online practicum experiences facilitate the development of PSTs' professional competencies.

## 2 LITERATURE REVIEW

The importance of a teaching internship or practicum experience when undergoing teacher education programs has been well documented (Hoang & Wyatt 2021; Iradel et al. 2021). However, this experience must be supported with knowledge gained from professional education courses that help trainee teachers develop personal and professional competencies to perform better during their practicum and become effective teachers in the field (Othman & Md Salleh 2016; Quinco-Cadosales 2018).

An important component of professional teacher competence includes teachers' professional dispositions and quality, particularly their self-efficacy beliefs (Hoang & Wyatt 2021; Yada et al. 2021). Teacher self-efficacy is said to affect not only students' outcomes, such as academic performance and motivation but also teachers' attributes, including their stress, burnout, attitudes towards a task, and their belief in assessing their ability to produce positive impacts on student educational outcomes (Yada et al. 2021; 2018). Hoang and Wyatt's (2021) exploratory factor analysis revealed dimensions of the PSTs' self-efficacy beliefs in their study, indicating consistent and strong relationships between self-efficacy beliefs and second language proficiency. Iradel and colleagues (2021), on the other hand, reiterated that interns' capacity to explore opportunities during unfamiliar situations allowed them to gain new professional experiences.

Several other studies reported PSTs being creative with their professional skills, especially with the use of technology. Iradel et al. (2021) and Stidham et al. (2021) found that due to the need for online teaching during the pandemic, PSTs devised creative strategies to participate in courses and have dialogues in a virtual environment. Boholano et al. (2021) found that teachers remained optimistic about pursuing digital literacy to develop effective and efficient remote teaching skills in the new normal. Similarly, Osman (2020) contended that teacher trainees had improved their technological and instructional designing skills.

On the other hand, Massari and colleagues (2021) found that limited internet access and the limitations to obtaining and using electronic gadgets by primary school students in Malaysia made online teaching and learning experiences challenging. However, it is not clear if early childhood PSTs in Malaysia shared similar concerns and challenges during their virtual practicum experiences and the extent to which these challenges affected PSTs' professional competencies. Therefore, this current study will help shed some light on how the development of professional competencies is facilitated through online practicum experiences.

### 3 METHODOLOGY

#### 3.1 *Sample, sampling technique, and instrument*

Following the closure of early childhood settings during the pandemic in 2021, Bachelor of Early Childhood Education undergraduates at our university in Malaysia was required to complete their practicum virtually to graduate on time. The practicum was carried out from May to June 2021 in Kuala Lumpur and Selangor, Malaysia, early childhood centres. The purpose of the current study was to gain a thorough understanding of how the development of pre-service teachers' professional competency is facilitated via online practicum. This study employed a phenomenological approach, and eight early childhood PSTs who were selected using a purposive sampling technique participated in in-depth semi-structured interviews. Semi-structured interviews were chosen because they are excellent for analyzing complicated behaviours, ideas, and emotions (Longhurst, 2009) and for gathering in-depth accounts of "personal experience" in qualitative studies (McArdle et al. 2012). The interview protocol described the interview process, and a list of open-ended interview questions created by the researchers served as the research instrument.

#### 3.2 *Data collection procedure and data analysis*

To obtain PSTs' agreement to participate in audio-recorded interview sessions, consent forms were emailed to them before the interview. It is essential to record PSTs' actual statements as much as possible throughout the interview sessions so that all information shared by the participants can be analyzed (Merriam 1998; Patton 2002). The online semi-structured in-depth interviews were conducted via Microsoft teams from 18 to 30 August 2021. During the interview sessions, probing questions were utilized to elicit more information and clarify PSTs' opinions and feelings about their virtual practicum experiences. In addition, field notes were taken to capture key points from the participants' responses. After that, all the interviews were transcribed for data analysis. Once the transcription process was completed, the transcripts were returned to PSTs to check the accuracy of the data and responses in the transcripts (member checking). The participants made further clarifications or changes to the transcripts when necessary. Next, the thematic analysis, as proposed by Braun and Clarke (2019), was carried out.

### 4 RESULT AND DISCUSSION

The current study aimed to explore how online practicum experiences facilitate the development of PSTs' professional competencies. The results and discussion are presented based on the themes derived from the thematic analysis: 1) professional disposition and qualities; 2) professional skills; 3) collaborating with families and mentor/centre support; 4) professional learning.

#### 4.1 *Professional disposition and qualities*

The first theme derived from the thematic analysis was professional disposition and qualities that include self-efficacy, reflective practices, ethics, and initiatives. Teachers' personal and professional characteristics are crucial for students' learning, harmonious communication skills, and adaptability to the demands of current times, beginning with self-adaptation. Nearly all PSTs disclosed that despite not being physically present at the centre, online practicum experiences facilitate the development of some positive attitudes such as mutual respect, cooperation, honesty, patience, punctuality, and a positive attitude to the mentor's feedback and initiatives. A few PSTs revealed that at the beginning, they did not feel

confident teaching online because of parents' presence during online classes. However, they took the initiative to seek feedback and do more practice to improve their English speaking skills.

*"Every time I teach, I seek improvement feedback and speak to other teachers to look for guidance and ways to improve my next lessons. I practised my pronunciation before the day of the lesson and before the lesson as well" (R1).*

PSTs were asked after completing the online practicum if they could teach in online classes. All participants claimed they have become more confident in teaching physical and online classes. Moreover, one participant (R5) felt confident that she could carry out online lessons like teachers.

*"I am now confident to teach in a physical and online classroom (R3).  
Won't say I am better than the teachers, but I can do the same level as they do" (R5).*

Furthermore, the online practicum also provides more opportunities for quality reflective practices through observation, claimed by Kadir and Aziz (2021) as a unique experience in online teaching practicum. This is primarily because PSTs can watch the recordings of their own and other teachers' teaching sessions for reflection anytime, as many times as they need, and in their own time.

*"We always discuss what we observed online, how our lessons were implemented, and how we can improve them" (R4, R5).*

Overall, the findings from this study were similar to many studies in that teaching interns showed optimism and were contented with their overall experiences because they believed that dealing with unfamiliar situations allowed them to develop professional skills (Iradel et al. 2021; Quinco-Cadosales 2022; Sepulveda-Escobar & Morrison 2020).

## 4.2 Professional skills

The thematic analysis of professional skills resulted in three sub-themes: skills in implementing developmentally appropriate teaching practices, digital skills, creativity, and adaptability.

### 4.2.1 Developmentally appropriate teaching practices

Despite the constraints encountered in implementing DAP in a virtual learning environment, PSTs in this study were able to adopt DAP to some extent which allowed them to advance their professional skills in the following aspects: 1) planning appropriate lesson plans, 2) selecting appropriate teaching strategies, 3) using different types of assessment techniques 4) building supportive relationships, interaction and student engagement, 5) managing online class behaviour.

The current study's findings indicated that PSTs encountered challenges in lesson planning and delivery because they had to consider various aspects of online teaching settings. The current findings are similar to other studies (e.g., Kim 2020; Timmons et al. 2021; Yamamura & Tsustsui 2021). In terms of planning a lesson, PSTs tried their best to create appropriate lesson plans based on the National Preschool Standard Curriculum that utilized a child-centred approach. It is understood that tangible materials were lacking in their online classrooms. Still, PSTs took every opportunity to use them whenever possible, especially those available at home, to not burden parents.

*"I did one of the storytelling where I used puppets" (R4).*

*"I have used some tangible materials available at home" (R1).*

Despite the limitations of an online learning environment, all PSTs made a great effort to make their online classes fun by using interactive and play-based teaching strategies, such as the demonstration technique, online games using interactive PowerPoint slides and questioning techniques to encourage students to participate in class discussions like that of a traditional classroom setting. However, one of the PSTs (R2) emphasized the necessity for alternative approaches rather than frequently using PowerPoint slides.

*“I used child-parent activities like drawing, craft, a collage that involved the joint participation of the parent and child” (R7).*

The literature emphasizes the parents’ role in observing and assessing their children (Wortham & Hardin 2019). Partnering with families, especially during this COVID 19 outbreak, is critical for assessment purposes and improving the overall quality of education provided to the child and families.

Finally, PSTs asserted that they managed to control their online class by providing positive reinforcement through verbal praise, using features available in online learning platforms, a reward system with an online chart, and virtual stickers. To handle very active children, some PSTs encourage the children to sing, dance, have a sharing session before the class, or speak to the child misbehaving in class, which is similar to the face-to-face classroom environment. One of the PSTs (R7) highlighted that, if necessary, she would raise the matter with parents and ask for their assistance monitoring their child’s behaviour during online classes. In conclusion, without physically being at the centre, PSTs could transfer and apply the skills and knowledge they gained in the online learning environment, thus creating a developmentally appropriate teaching practice.

#### 4.2.2 *Digital skills*

Even though PSTs didn’t receive proper training to handle online classes, it is interesting that nearly all of them claimed that the online practicum enhanced their digital skills. Upon completion of the online practicum, they were asked to rate their digital competency, and 7 of them rated 4 out of 5, while 1 rated 3 out of 5. They admitted to putting in a lot of effort to learn how to create interesting PPT presentations, enjoyable online games, and ways to make the most of the features in online learning platforms to increase student engagement.

*“I learned how to create interactive games using PowerPoint and how to use the animations. I don’t think I would have pushed myself to learn how to do these if not for my online lessons” (R5).*

Similarly, Boholano et al. (2021) found that teachers remained optimistic in their pursuit of digital literacy to develop effective and efficient remote teaching skills in the new normal, while Osman (2020) contended that teacher trainees had improved their technological and instructional designing skills. However, it is believed that the effectiveness of employing technology needs to be increased since PSTs did not obtain adequate online teaching and learning training. Saxina (2021) asserted that teachers’ attitudes and technological literacy impact their students’ motivation and learning. Therefore, to teach successfully in an online learning environment, PSTs must study further and quickly acquire the necessary technical knowledge and abilities (Massari et al. 2021). This implies that technological elements should be a top priority in teacher education programs.

#### 4.2.3 *Creativity and adaptability*

The PSTs were confronted with new teaching techniques and limited resources for online lessons, forcing them to be creative in lesson planning and make substantial changes in lesson delivery. Despite these challenges, PSTs have admitted to seriously honing their creativity to make their lessons captivating and meaningful for the children. Additionally, it was noticed that PSTs were fully aware of the need to be adaptable or flexible when

designing their lessons because some modifications may be necessary depending on the specific needs of the children. This finding was congruent with Sharoff's (2019) finding asserting that teaching an online course involves originality, innovation, and a strong online presence of the teacher in the online environment.

Moreover, when asked about their overall practicum experiences, PSTs expressed delight despite their challenges. Overall, they acknowledged their progress and said they had succeeded in adapting to online teaching.

*"I must be creative in designing the PowerPoint slides and include games and other enjoyable features. I enjoy preparing the pre-recorded videos even though creating them can be very time-consuming" (R7).*

*"I think I adapted well to online teaching". Come to think of it, and I am glad I had this opportunity to see how I progressed in online teaching ... sometimes I feel that those of us who had to undergo online practicum, maybe the lucky one hahaha" (R2).*

Similar findings were reported by Iradel et al. (2021) and Stidham et al. (2021). Due to the need for online teaching during the pandemic, PSTs devised creative strategies to participate in courses and dialogue in a virtual environment. Moreover, PSTs adapted well to the dynamics of online practicum to the policy statements of OECD (Organization of Economic Co-operation and Development) and UNESCO (United Nations Educational, Scientific and Cultural Organization) that emphasize the need for educating students on social and emotional competencies for a VUCA (volatile, uncertain, complex, ambiguous) environment (Hadar et al. 2020). In agreement with the findings of Iradel et al. (2021), PSTs in this study demonstrated socioemotional competence in coping with VUCA settings.

#### 4.3 Collaborating with families and mentor/centre support

Although some PSTs reported a lack of parental support during online classes, half of the participants also acknowledged some forms of support they received from parents. For example, assistance during online classes in making sure that the child completed the worksheet and sent it to the teacher, so the teacher could give some feedback (R2). Some parents also turned off the audio if the background noise was loud. Other than that, more than half of PSTs highlighted support received from the centre/mentor, including the mentor's constructive feedback and assistance, sending learning materials/assessments to parents, and teachers' personalities, providing information about the child and maintaining a small online class size. A few of their responses can be seen below.

*"My mentor was also clearing time to help me and checked all my activities, and told me what to improve. All the teachers were very friendly and supportive" (R2).*

*"The teachers are willing to help me and tell me how to handle the children, especially the special needs and hyperactive children" (R1).*

Numerous studies emphasize the value of the collaborative link between schools and universities. For example, Zeichner et al. (2015) emphasized that school is the 'third space', the meeting point where teacher trainees apply the knowledge and skills acquired in the university. Max (2010) posited a similar contention as a "boundary zone" where the two active systems, schools, and universities, are in contact for knowledge and skill-building. In addition, Hartley (2007) suggests that partnerships between schools, universities, and communities act as an "interspace" for enhanced learning. In this context, such partnership efforts in teacher training education institutes remain in their infancy, especially in training PSTs for technology-integrated teaching practices during practicum placement (Farrell 2021).



#### 4.4 Professional learning

Other recurring themes emerging from the data were professional learning and self-management skills. Despite the fact that the pandemic has impeded PSTs' physical interactions with their mentors, supervisors, and peers, the utilization of digital ways to communicate in online classroom environments has benefitted them and strengthened their competence. The online practicum provides more opportunities for social interaction between mentors and PSTs as they can interact anywhere and at their available time (Ersin & Atay (2020). It has also provided students with more opportunities to learn from many sources, such as peer learning, self-learning, observational learning, and mentorship. These educational experiences have shaped their pedagogical knowledge, technological skills, creative thinking, digital skills, online teaching methods, and ability to care for young children.

*"I asked for help from my friend. We had a video call for two hours, and then she taught me how to set the visual or sound effects that I wanted" (R3).*

*"We learned from each other (R5, R4) ... I observed how the teachers taught in their online classes (R1) ... I also learned from my mentor. I asked her how she set that animation" (R7, R6).*

Teng et al. (2021) have identified that the e-interns who carried out on-site internships during the pandemic benefitted in terms of developing their technical skills, soft skills, thinking skills, especially critical thinking and creativity, and management skills (time/project management, leadership). Though the PSTs highlighted the fulfilling, challenging, and unmet expectations encountered by them in their online practicum experiences, they acknowledged the strong support network with mentors, supervisors, and peers, their ability to provide a substantial cognitive-social presence in the online teaching, and ability to adapt to the dynamics of the teaching and learning needs of children. These findings agreed with Iradel et al. (2021), who highlighted that despite the obstacles in online teaching internships, interns exhibited a growth mindset, resilience, honesty, and grit, and they were successful in gaining valuable insights.

## 5 RECOMMENDATIONS AND CONCLUSION

The emergency teaching needs during the COVID-19 pandemic have unpacked the realities of preparing professional competencies of PSTs for the needs of 21st-century teaching. The current study aimed to investigate how online practicum facilitated PSTs in developing their professional competencies. One of the limitations of the current study is that the data were collected retrospectively through interviews with PSTs concerning their practicum experiences. Interviews were conducted till the point of saturation was attained in identifying the themes. The study findings indicated that PSTs shaped their professional competencies by developing a professional disposition toward online teaching, turning challenges into opportunities in gaining professional skills, acting decisively and positively in taking initiatives toward professional learning and seeking alternative approaches in collaborating with families and mentor/centre support for a better learning experience of children.

The study recommends the domain of professional competencies development of PSTs in three areas. Firstly, revisiting the teacher training curriculum for curriculum reforms, especially for developing a set of beliefs and professional qualities, digital skills, creativity, and adaptability for technology-integrated teaching. It is envisaged that teacher educators leverage teacher agency in preparing PSTs for teaching in the twenty-first century. Secondly, PSTs seek school, mentors, parents, and community support in advancing their professional competencies. It is crucial that a sustainable and active collaboration between the practicum

placement centre, the parental community, and the teacher training institutions need to be strengthened. In this regard, the social responsibilities of universities and school partnerships in grooming professionally competent teachers are significant. While PSTs seek practicum centres at the onset of the course practicum, it is recommended teacher training institutions can accelerate such collaborative efforts by providing an initial prior field experience for the PSTs before the start of their practicum. Especially by allowing PSTs to visit their designated practicum centre for other assignment activities and micro-teaching sessions that help them become familiar with the school environment, teaching approaches, demands, and requirements of the centre and earn parental support. Lastly, training PSTs in a simulated and virtual learning environment could be advantageous for managing and organizing online teaching and classroom activities. Altogether, this study has contributed to the growing knowledge of preparing professional competencies of teacher trainees for 21st-century teaching.

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# Does education expenditure promote long-lasting economic growth? Education expenditure based on Thai historical data

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**ABSTRACT:** The paper aims to quantitatively demonstrate and investigate the relationship between education spending and GDP to choose the best model for predicting economic growth based on indicators of education spending from 2007 to 2018. It also aims to provide policy recommendations for the government to support more sustainable education. The article uses regression analysis to examine the data by using different models. The empirical result suggests that spending on education is the best predictor of GDP because it has the highest R<sup>2</sup> value. The result means that a 1 unit increase in education spending increases GDP by 0.0126. Thus, education expenditure should be considered an essential variable, which means that education has contributed to economic growth in Thailand during the estimation period. The results can provide information on how the formulation and implementation of appropriate educational fiscal policies could help improve the quality of education and thus contribute to Thailand's economic development. In addition, the study can serve as a guide for reforming Thailand's education policies that will lead to improved learning and educational outcomes.

## 1 INTRODUCTION

The ministry of education's expenditures is supported by the government each year, although the amount of education spending depends on the situation of the country and the government's policies at that time. However, the impact of education on economic growth is comprehensively presented due to the accumulation of qualified human development, including wealth. Education is an important factor in a country's development, which is considered a strong foundation for development in various fields such as research, sustainable development, science, technology, and innovation. Every aspect of society is connected to this foundation. In particular, the economy can be connected with the aspect of education.

In a study, Takii & Tanaka (2009) suggest that the negative impact of income inequality on GDP is reduced when the government prioritizes educational resources across the budget. However, the outcome of skill monitoring depends on the economy's production structure. The relationship between education expenditure indices and economic growth has been studied for decades (Pereira & Aubyn 2009; Odit et al. 2010). Several papers from different countries look at spending and growth. For example, long-term economic growth in Australia can be explained by spending on education, health, and social services. In contrast, economic growth in New Zealand is primarily explained by spending on health and social services (Khan & Bashar 2015). Khan & Bashar (2015) suggested that developing countries,

especially ASEAN countries, should pay attention to spending on education and society as their study showed a positive relationship between education and social spending and economic growth. More generous policies should be adopted for the development of well-being (Khan & Bashar 2015). In both Morocco and Tunisia, public education spending increases GDP per capita in the long run, but more intensively in Morocco than in Tunisia (Ifa & Guetat 2018). The study by Abdellatif et al. (2013) shows a positive relationship between economic growth rate, payments, and education spending in the Philippines. Moreover, Islam, Wadud, and Qamarullah (2007) found a bidirectional causality between education and GDP in Bangladesh. However, Yousif's (2008) study suggests that the relationship between education and economic growth cannot be generalized due to differences in policy and institutional settings across countries.

When we talk about education, growth, and development, the Human Development Index (HDI) is always used as an indicator to prove them. The concept of HDI was formulated in the first Human Development Report (HDR) in 1990 and reaffirmed in the 20th-anniversary report in 2010. It identifies education as a critical component of progress in HD (UNDP 2020). The HDI was created to indicate that the overall capabilities of the nation's population should be the ultimate criterion for assessing national development. The assessment of national development is not only about economic growth. The HDI can lead a debate on human capital development policy priorities. In addition, the HDI is a summary indicator of average achievement in important dimensions, including long and healthy life, knowledge, and an adequate standard of living. The HDI score is measured as the geometric mean of the index normalized for each dimension. HDI cannot reflect inequality, poverty, human security, or empowerment (UNDP 2020). A high HDI is associated with a high quality of life.

In developed countries, a large portion of national wealth is typically devoted to funding the education sector. For example, Denmark and Sweden spent 8.2% and 7.6%, respectively, of their national wealth on education, whereas Myanmar and Cambodia spent only 1.8% and 2.2% of their GDP on education, respectively (The World Bank Group 2020). In Thailand, total public expenditure on education (% of GDP) was reported to be 4.124% in 2013, after which there is no recorded data to explain the ratio of education expenditure to GDP (The World Bank Group 2020). In addition, the study by Cuesta & Madrigal (2014) found that education spending is not concentrated in the poorest households and does not contribute to an increase in household wealth. This fallacy needs to be clarified to achieve economic development.

Education has been viewed as a public intervention and described in the "New Growth Theory" as having the potential to increase expected income and growth of the country and reduce poverty (Mukherjee 2007). Rehman, Tariq & Khan (2018) believe that both physical and human capital are essential to achieve higher economic growth. Therefore, there is some evidence of the relationship between educational development and economic growth to suggest how to use the country. It is time to show the importance of education for growth in Thailand by literally proposing policies for the development of the country

## 2 OBJECTIVES

This study differs from previous studies because it captures long-term and short-term dynamics of the above-mentioned relationship and tests its structural stability. Thus, the objectives of this study are as follows:

- (1) To demonstrate the relationship between educational expenditure and GDP.
- (2) To make policy recommendations to the government to promote more sustainable education.

### 3 RESEARCH AND METHODOLOGY

The empirical analysis examines the relationship between education expenditure and economic growth using linear regression analysis.

#### 3.1 Data description

The study used time-series annual data that spans 2007 to 2018. A total of four variables were used for the study (Table 1). The definitions and sources of each of the variables are described in Table 1, which presents a summary of the descriptive statistics using data averaged over 2007–2018.

Table 1. Data description and source.

Variable	Definition	Data Source
<b>GDP</b>	GDP, or Gross Domestic Product, is a measure of economic growth.	Bank of Thailand (2020)
<b>Budget</b>	Disbursement of Expenditure classified by economic characteristics and ministry, which measures education expenditure	Government Fiscal Management Information System. (2020).

These statistical concepts are illustrated using a World Economic Forum data set (2020), Bank of Thailand (2020), and The World Bank Group (2019) between 2007–2018.

#### 3.2 Research design

The first step of the empirical analysis tests the integration of the variables: education expenditure (budget) and gross domestic product (GDP). When the data were checked for normal distribution, these variables had normal distribution, which is classified under the conditions of linear regression analysis. Considering the forecasting trend, it is found that the data has the characteristics of an increasing trend, which means the form of forecasting is given as:

$$Y = \beta_0 + \beta_1 X$$

where

Y is the dependent variable

X is the independent variable

$\beta_0$  is constant

$\beta_1$  is the regression coefficient

The paper utilizes the technique of vector error correction models. This is accomplished in four steps.

Finally, the forecasting model was compared by considering the coefficient of determination ( $R^2$ ). The highest  $R^2$  values mean that the forecasting models are most suitable.

### 4 RESEARCH RESULT

#### 4.1 Descriptive statistics

Table 2 presents the descriptive statistics for the variables by using data averaged over 2007–2018. All the variables exhibit positive mean values. Also, the sum squared deviation

Table 2. Summary of Descriptive Statistics.

	Budget (million Baht)	GDP (Billion Baht)
<b>Mean</b>	392377.5533	8,920.78
<b>Median</b>	413,464.084	9,022.450
<b>Maximum</b>	471570.978	10,673.700
<b>Minimum</b>	264109.32	7,579.500
<b>Std. Dev.</b>	76,171.342	1,040.990

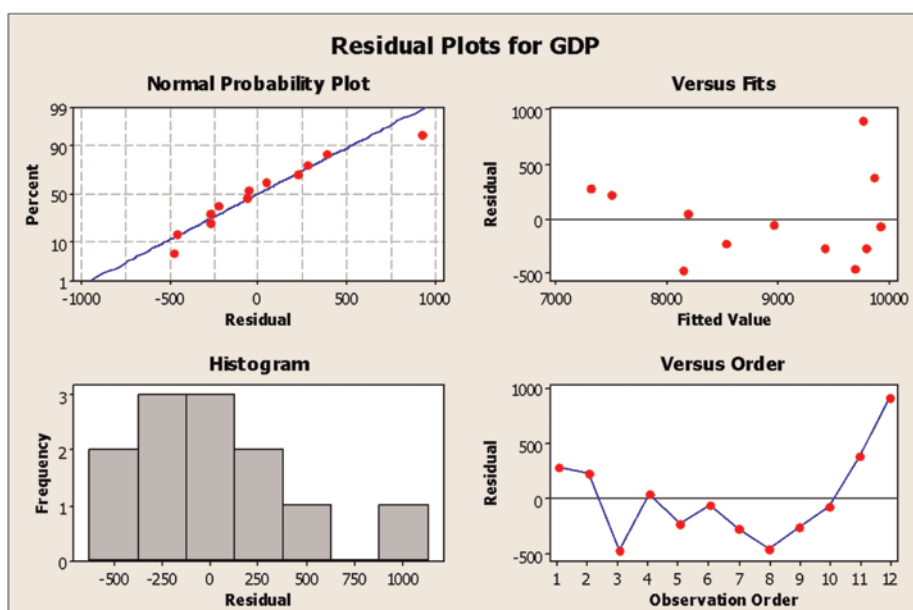


Figure 1. Normalization of data.

row represents the net change over the sample period. Education expenditure has the most significant standard deviation among all the variables.

#### 4.2 Model test result

The Forecasting of Education Expenditure by the Ministry of Education affects GDP is shown in Figure 1.

From Figure 1, the data is surrounded by straight lines, which means the forecasting data for educational expenditure affects GDP with a normal distribution. The data has also shown a higher forecasting trend. From the analysis of the predictive model, it is found that the equation is:

$$GDP = 3973 + 0.0126 \text{ budget}$$

The R2 is 85.1%, which means the model fits the data highly. The result indicates that the budget can explain the variance of GDP by 85.1%.

The results suggest that there is a significant predicting variable with all the models. As shown in Table 1, education expenditure is most suitable for predicting GDP because of the

highest value of R<sup>2</sup>. The result means that if educational expenditure increases by 1 unit, GDP will increase by 0.0126 units.

## 5 DISCUSSION

In this paper, we investigated the best model to predict education and economic growth in Thailand from 2007 to 2018 using linear regression analysis. The empirical result suggests that the best model for predicting economic growth based on indicators of education spending during 2007–2018 is education spending. Thus, education expenditure should be considered an essential variable, which means that education contributed to economic growth in Thailand during the estimation period. The importance of education for economic development was first recognized by the father of economics, Adam Smith (Evensky 2015). Adam Smith advocated the idea of specialization of labor. According to Smith, the amount of a nation's annual product depends on the amount of labor used in production and labor productivity. According to Smith, the first factor is of less importance than the other factors, which can be seen from the fact that people in earlier times lived much poorer than modern people, even though the percentage of labor employed was much higher. Smith points out the importance of the division of labor and the increase in national wealth due to the first factor.

Inseparable relationships characterize the relations between education, politics, society, and the economy. Politics, the economy, and education are essential factors for the country's development. Investment in education will be critical to improving the sustainability of the country. As mentioned earlier, policy instruments are based on a direct regulatory approach. Considering the results of this study and the well-being of the people, education spending should be considered an essential variable, which means that education contributes to economic growth in Thailand. The authors of this study suggest the following measures, which they believe the government should sincerely support in order to promote sustainable growth in Thailand by beginning to invest in education.

Design a practical information and education program in rural communities to improve public education and contribute to more effective educational access in the future. The education gap means that Thailand still has a highly skilled workforce below standard while developing countries need skilled or highly skilled workers. Lorenzo (2008) states, "Access to natural resources is broadly defined here as the process by which people individually or collectively able to use natural resources temporarily or permanently" (p.9), and education is also based on the resources available to citizens. People should have equal opportunities to get a good education. Developing the existing knowledge system would prove to be a valuable educational tool. Education programs must educate students democratically and recognize how their practices contribute to sustainable growth. At the local level, governments should promote education in schools, local communities, and civil society organizations. Therefore, the government should seriously support education in Thailand with funding, resources, and experienced personnel. Nowadays, technology makes people's lives convenient, and media technology even influenced the work of education a few years ago. Public media has easy access to people, so the knowledge of public media has been widely disseminated. For example, the government should fund television programs for educational purposes, as well as for educational institutions that offer educational programs.

Providing financial aid helps incentivize students to try something new. Education funding is strategic to eradicating extreme poverty and increasing shared prosperity. However, past and present government policies do not solve long-term problems; they only solve the problem when that particular government is in place. Although the Student Loan Fund has helped many students, it does not cover living costs while studying. The government should also adopt financial strategy policies and improve students' access to appropriate financial services, especially in the hinterland. For example, the government supports loan programs



with low or no interest rates for poor students in the hinterland or rural areas. The long-term loan is an exciting policy the government should support to reduce student debt burdens.

Establish a transparent operational management policy that identifies the total economic, environmental, and social costs and benefits of education and all related transfers between the educational institution and the student. Educational institutions play an essential role in human capital. According to the OECD (2012), the skills available in the labor force and the price of those skills through human capital development determine how countries will perform in the global marketplace. As services and production systems become more complex, they require workers with higher levels of education. To attract and retain skilled workers, societies must strike the right balance between promoting overall equity and offering strong economic incentives. Higher levels of education in the population, better employment prospects, and higher earnings associated with higher levels of education can contribute to growth and prosperity in OECD countries. In this context, growth in labor income in GDP by education category provides a simple measure to illustrate this move toward higher skills and its impact on economic growth. People should receive a thorough education to thrive and lead meaningful lives. The rising education budget has led to more and more people of school age having access to education, especially at the elementary and middle school levels.

Figure 2 shows that externalizing potential can serve to solve problems. The externalizing potentials are an educational system’s “borrowable” elements, including guiding philosophy, ambitions, goals, strategies, enabling structures, processes, and techniques. The second phase, the decision-making phase, indicates when education systems decide to change and refers to how governments introduce these new ideas, strategies, and models into the local context to initiate the change process. Implementation focuses on adapting what is borrowed and the appropriateness of the context that will determine the pace of change. Finally, indigenization involves objectives that are studied in relation to the existing system; absorption of external features to understand the extent to which features have been adopted; synthesis, when the policy or practice becomes part of the borrower’s strategy; and evaluation, a review to determine whether the practice has been successful, which may lead to a restart of the process.

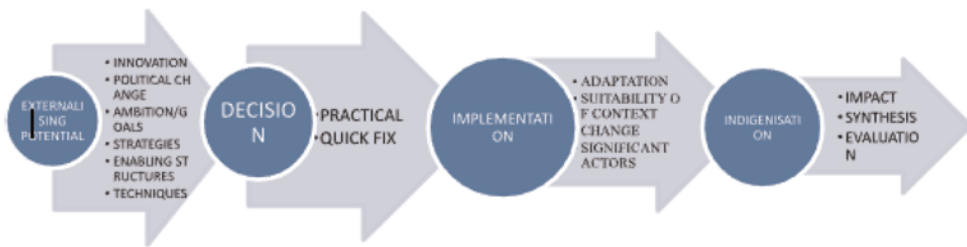


Figure 2. An indicative framework for education quality.

It is clear that most developed countries have a good education system and can develop new value-added technologies. A nation’s economy can grow if the vast majority of its citizens have a good education. Developing countries, on the other hand, are statistically inefficient in the field of education. Therefore, education is one of the most critical matters and deserves a great investment because it allows people to lead good, meaningful, and complete lives.

## 6 CONCLUSION

The findings have important policy implications for Thailand because of the economic uncertainty that affects every aspect of human activity in society, especially education.

The conclusions drawn from this analysis could be helpful for education policymakers to invest in education. In particular, there is an incentive for the government to increase public spending on education as it promotes economic growth.

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# Student achievement motivation scale: Hope for success and fear of failure?

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**ABSTRACT:** This study aims to develop an achievement motivation scale for high school students that can reveal two tendencies: the hope for success and the fear of failure. This study uses a research and development design based on Gregory's development procedures. The population used is students from public high schools throughout Surabaya. The achievement motivation scale was developed based on McClelland's theoretical construct. Based on the results of exploratory factor analysis, the initial four dimensions/attributes were reduced to one dimension/attribute, namely the preference for challenging academic tasks to be completed. As for the results of the confirmatory factor analysis, 38 items on the achievement motivation scale have a loading factor value above 0.30, so it can be stated that all items are valid. So, it is concluded that the achievement motivation scale meets psychometric feasibility.

## 1 INTRODUCTION

Over the past five years, research on achievement motivation has received much attention. Based on the findings of existing research, achievement motivation is concluded as an essential predictor that affects students' academic achievement (Dagnew 2017) (Balogun et al. 2017) (Dagnew 2018) (Bukhari et al. 2019) (Steinmayr et al. 2019). In addition, achievement motivation is a crucial moderator of academic procrastination and academic dishonesty (Wu & Fan 2017) (Akmal et al. 2017) (Malkoç et al. 2018) (Krou et al. 2021). However, another finding states that the higher the school level, the more student achievement motivation tends to decrease (Muenks et al. 2018).

Henry A. Murray introduced the concept of achievement motivation in 1938 in his taxonomy of twenty needs. According to Murray (Schunk et al. 2008), achievement motivation is the need to solve difficult things, master, outperform, match, and surpass other individuals to overcome obstacles and achieve high standards. Furthermore, McClelland (1987) states that achievement motivation is an effort to achieve the best results by referring to a certain standard of excellence.

Achievement motivation has two tendencies: the hope to succeed and the fear of failure (Heckhausen & Heckhausen 2018). In line with that, Atkinson (Schunk et al. 2008) states that two things trigger achievement motivation, namely: (a) the tendency to achieve success (Ms) and (b) the tendency to avoid failure (Maf). A person shows the first motive with a proud reaction to the results. The second motive could be a shame because someone failed in their duties. Both achievements influence individual behaviour.

The measurement of achievement motivation has been done using the Thematic Apperception Test (TAT) and questionnaires/scales. The TAT uses an indirect approach, while the questionnaire/scale uses a direct approach in the form of self-reports. The reliability of the two types of instruments continues to be studied, even though the measurement results are not correlated. The instrument focuses on measuring differences in individual achievement motivation (Heckhausen & Heckhausen 2018) (Steinmayr et al. 2019) and motivation tendencies (Pekrun 2017) (Turner et al. 2021).

The results of measuring achievement motivation need to reveal two motives, namely hope for success (HS) and fear of failure (fear of failure/FF) (Heckhausen & Heckhausen 2018). Hope for success is a unidimensional construct, whereas fear of failure consists of passive failure avoidance and active failure management (Pittig et al. 2018).

Based on the above background, this study aims to develop a high school student achievement motivation scale that can reveal the motives of hope for success and fear of failure. The achievement motivation scale was created in response to the (McClelland 1987) construct.

## 2 METHOD

This study uses a research and development design. The design of the achievement motivation scale is based on the procedures for developing psychological tests by Gregory (2014), namely: (1) defining the test; (2) determining the measurement method; (3) constructing items; (4) try-out and item analysis; and (5) revision.

The population used is students of state senior high schools in Surabaya. The sample is determined using a probability sampling technique using simple random sampling. The technique is said to be simple because the sampling of members from the population uses a random method, namely without regard to the strata that exist in the population. The number of samples is 350 students.

The achievement motivation scale instrument was developed based on the McClelland (1987) theoretical construct. The indicators of achievement motivation are: (1) liking tasks that have a moderate level of difficulty; (2) taking personal responsibility for their performance; (3) seeking feedback for the performance performed; and (4) having a high power of innovation in completing tasks (McClelland 1987). The development of the achievement motivation scale also refers to two tendencies, namely, the hope for success and the fear of failure (Heckhausen & Heckhausen 2018).

The achievement motivation scale uses a Likert scale. The Likert scale model is a scale model that uses the division of areas into a specific continuum that has five answer choices. However, the researcher only uses four alternative answer choices with consideration to avoid the choice that occupies the middle (neutral) position. The existence of a middle choice as a neutral position allows respondents to be encouraged to choose the alternative so that it becomes biased (Tuckman 1999) (Azwar 2003). The answer choices for the achievement motivation scale consist of: very appropriate, appropriate, not appropriate, and very unsuitable.

The data analysis technique used was factor analysis. Hair et al. (2010) and Pituch and Stevens (2016) use two methods: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (Hair et al. 2010). Exploratory factor analysis was used to reduce the achievement motivation variable into a new set of dimensions and attributes. While the confirmatory factor analysis for construct validation of the achievement motivation scale The factor analysis begins with a sample adequacy assumption test referring to the KMO-MSA value and the feasibility of the item referring to the anti-image correlation value greater than 0.50. The reference factor loading for 350 is 0.30 (Hair et al. 2010). SPSS for Windows version 25 was used for EFA and CFA analysis.

Table 1. Blueprint of the achievement motivation scale.

Variable	Indicator	Descriptor	Statement	
			Hope to succeed	Fear of failure
Achievement motivation	1. Passion for challenging academic tasks to complete	1.1. Choose challenging academic assignments	1,2	3,4
		1.2. Have confidence in completing tasks	5,6	7,8
		1.3. Work hard on the completion of academic assignments	9,10	11,12
	2. Responsibility for academic assignments	2.1. Focus on your own abilities	13,14	15,16
		2.2. Make a plan for completing academic assignments	17,18	19,20
		2.3. Doing academic assignments as well as possible	21,22	23,24
	3. Have an innovative nature in learning	3.1. Using effective study techniques	25,26	27
		3.2. The efficiency of energy, time, and cost in learning	28,29	30,31,32
	4. Utilization of feedback on every effort made	4.1. Proud of the success achieved	33,34	
		4.2. Expect teacher/friend evaluation	35,36	
		4.3. Do a self-evaluation	37	38

### 3 RESULT

The factor analysis stage begins with testing sample adequacy and item feasibility assumptions. The sample adequacy assumption test refers to the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO-MSA), which is presented in the following Table 2.

Table 2. Sample sufficiency test.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.85
Bartlett's Test of Sphericity	Approx. Chi-Square	3211.44
	df	0.70
	Sig.	0.00

Based on the table above, KMO-MSA has a value of  $0.85 > 0.50$  and a significance value of  $0.00 < 0.05$ , which means that the assumption of sample adequacy is met and can be continued for factor analysis. Furthermore, the item feasibility test is carried out by referring to the anti-image correlation value presented in the following table.

Based on the table Item Feasibility Test, the anti-image correlation of all items has a value greater than 0.50, which means that the item's feasibility assumption is met and can be continued for factor analysis.

After the assumption test is met, it is continued with exploratory factor analysis. The determination of factors based on the analysis of total variance is explained. If the total initial eigenvalues  $> 1$ , then the factor can explain the attribute well so that it can be included in the formation of the factor. Based on the exploratory factor analysis results, the initial four dimensions/attributes were reduced to one dimension/attribute, namely liking for challenging academic tasks to complete. If the four attributes are reduced to one factor, then the attribute variance that factor can explain is 56.19%.

Furthermore, confirmatory factor analysis was conducted to validate the achievement motivation scale construct. The test is carried out by matching the loading in the matrix form as presented in the following table.

Based on the table construct validation test, 38 items on the achievement motivation scale have a loading factor value above 0.30, so it can be stated that all items are valid. The reliability of the achievement motivation scale has a Cronbach's alpha value of 0.83, which means reliable.

#### 4 DISCUSSION

Referring to the results of the exploratory factor analysis, the four initial dimensions/attributes of the achievement motivation scale were reduced to one dimension/attribute, namely liking for challenging academic tasks to complete. This is in line with McClelland's (1987) opinion that the results achieved from challenging academic assignments will provide feedback on how far the effort has been made. Furthermore, (Weiner 1986) also states that he likes tasks related to achievement because he believes that success is a form of high and hard ability.

The attribute of liking challenging academic tasks to complete is similar to the attribute of the value of the task (Wigfield et al. 2006). The value of the task is interpreted as a belief that the tasks at hand are engaging, meaningful, and valuable for him in the future. So, beliefs about the value that students place on an academic task are essential to them (attainment value), fun to do (intrinsic interest), and have a use or benefit for them (utility value). The value of the task has similarities with the value-incentive by Atkinson (Schunk, D.H., Pintrich, P.R. & Meece 2008); internal and external interest by Polskaia et al. (2015).

The new dimension has two tendencies: the hope to succeed and the fear of failure (Heckhausen & Heckhausen 2018). A person shows the first motive with a proud reaction to the results. The second motive could be a shame because someone failed in their duties. Students who choose to be involved in achievement tasks, exert effort, and persist in achievement tasks are very likely to achieve high academic achievements (Schunk, D.H., Pintrich, P.R., & Meece 2008).

Based on the results of the confirmatory factor analysis, 38 items on the achievement motivation scale have a loading factor value above 0.30, so it can be stated that all items are valid. Confirmation factor analysis is one way to test construct validity (Hair et al. 2010).

#### 5 CONCLUSION

Based on the results and discussion above, the achievement motivation scale meets the psychometric feasibility aspect. Referring to the results of the exploratory factor analysis, the initial four dimensions/attributes were reduced to one dimension/attribute, namely liking for challenging academic tasks to be completed, with an attribute variance that these factors of 56.19% could explain. As for the results of the confirmatory factor analysis, 38 items on the

achievement motivation scale have a loading factor value above 0.30, so it can be stated that all items are valid. The reliability of the achievement motivation scale has a Cronbach's alpha value of 0.83, which means reliable.

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## Analyzing the need for Qur'anic digital learning for higher education: Case study of *Universitas Negeri Malang*

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**ABSTRACT:** Qur'anic learning is one of the essential lessons in Islamic studies, which plays a significant role for Muslims, including the millennial generation. The millennial generation is closely related to the use of technology. Even regarding access to religious knowledge, they tend to use technology. However, the distinction between Islamic Studies (the Qur'an) as a religious and academic approach is that there is still a need to involve an interface learning process between the learner and the teacher. This study focuses on measuring the analysis needs of students related to the Qur'an digital learning media. The Muslim millennial group in this study was represented by the first-year students from Universitas Negeri Malang (UM) in 2020 and 2021. They collected data through interviews and in-depth observations of 145 students who studied Islamic education courses from the Faculty of Letters, Faculty of Sports Science, and Faculty of Social Sciences.

*Keywords:* digital, Qur'anic learning, higher education

### 1 INTRODUCTION

Learning the Qur'an is one of the essential aspects of teaching Islam at various academic levels (Amin et al. 2018). From primary to tertiary education, Islamic Religious Education (IRE) is one of the mandatory lessons to be delivered at every level of education. This is a mandate from the National Education System Law, which places IRE with Indonesian Language Education, Pancasila, and Citizenship Education as compulsory subjects or courses (Alawi 2019; Aziz 2011; Huda 2019). However, in reality, realizing this achievement is a challenging thing to do. Educators and students are the learning actors who need learning media to make the knowledge transfer process more optimal.

As one of the objects of study in Islamic studies, the Qur'an has been widely reviewed by various Muslim and Western scholars (Fitriani 2020; Jalinus & Jama 2020; Wudda 2020). Research and discussions related to the Qur'an from multiple perspectives have also become the focus of discussion in various academic and non-academic forums. Learning the Qur'an is the mainstay in fostering the behavior and values of a Muslim. As a form of praxis implementation, Al-Qur'an learning has been delivered at the formal, informal, and non-formal education levels (Lubis 2017; Masruroh, 2020). Contents as a way of life and instructions for behavior are the main items in the Qur'an.

Even in learning the Qur'an, the process has shifts and dynamics. Referring to the conventional process, learning the Qur'an is carried out directly (direct model) by involving educators (*Ulama, Kyai/Bu Nyai, and Ustadz/lah*) and students in the same forum (face-to-face). However, in the current context, learning the Qur'an can be done via the internet or social media (Masruroh 2020). In an increasingly globalized world, the authority and sacredness of learning the Qur'an are not only in the conventional space but also in the digital world. Social media platforms are also starting to be found; many channels or shows related

to learning the Qur'an are found (Mujib & Marhamah 2020; Noh et al. 2020). The dynamics and shifts in this regard must be addressed and captured as a positive phenomenon to preserve the tradition of reading and studying the Qur'an.

There are various ways of preserving the learning of the Qur'an, one of which is by adjusting or modifying the learning media of the Qur'an to be digital or virtual. In the discussion related to learning the Qur'an in the digital world, it is essential to discuss the transformation of Islamic media initiated by Ziaudin Sardar. There are three transformations in Islamic studies related to developments in the study of the Qur'an. First, in the mid-eighteenth century, the first Muslims recognized paper from Chinese civilization. Second, when the Muslim community began to recognize the existence of printing. This momentum was marked by the process of printing the Qur'an for distribution. Third, the digitalization era is marked by the transformation of the Qur'an toward digital and virtual (Anggoro 2019; Sardar 2019). Today, the transformation of the Qur'an toward digital is closely related to the development of middle-class Muslims who, on average, come from urban areas (Ahmadi 2019; Darojatun 2018; Husna 2018). In addition, their background is the millennial generation, who are in direct contact with technology, social media, and massive amounts of information. The meaning of the transformation of the Qur'an in this study will be directed at providing a comprehensive academic picture related to the dynamics of learning the Qur'an for millennials who use the Android platform as a learning instrument.

The results of research conducted by Slama in 2018 show that the millennial generation tends to have a more positive attitude toward using technology and digital platforms or social media in learning the Qur'an (Slama 2018). This fact makes it possible to conclude that integrating cellular technology is one of the best ways to continuously improve the collaboration and creativity of the millennial generation, especially in learning the Qur'an. Indeed, innovation in learning the Qur'an has received serious attention from several researchers since the development of media, technology, and information.

Several prior studies on learning the Qur'an and its innovations using Android and other Qur'anic learning models have been discussed, including the use of LMS technology (Hanafi 2019; Hanafi et al. 2020), validation test and development of a Qur'an learning questionnaire (Hanafi et al. 2020), and optimizing Qur'an learning media for people with disabilities (Hanafi 2019). The existence of a learning medium has played an essential role in the teaching and learning process, which is expected to be a catalyst to improve and help students understand the object of learning. In the last decade, learning media development has often been colored by the Learning Management System (LMS) model, which optimizes open-source principles in expanding and enlarging digital access to knowledge and information (Duin & Tham 2020).

The development of this research is directed at optimizing the ability to read the Qur'an with a focus on Islamic Religious Education Courses. As one of the courses focusing on character development at the Universitas Negeri Malang (UM), IRE courses are marketed in the first year of lectures (Semesters 1 and 2). These courses are mandatory for every new student. One of the challenges of learning IRE at public higher education is how to increase student interest in exploring knowledge related to the skills of reading the Qur'an. Undeniably, the variety and quality of student input also affect student participation and interest in learning the Qur'an. Considering the situation's circumstances, this research is preliminary research on the innovation of Qur'an learning by targeting the segmentation of millennials, namely students of higher education. This study focuses on the main topic, that is, the analysis of respondents' needs from a force field perspective. This study aims to map student responses regarding using digital Qur'an learning media at UM, primarily through the lens of force field perspective.

## 2 METHOD

Through interactive and comprehensive interview-based data collection methods, the respondents were students for the 2020–2021 academic year spread across several faculties at the Universitas Negeri Malang (UM). The latter were taking Islamic Religious Education

courses. The research sample selection in each class was 70% of the total respondents in the five classes. Data were collected through interview techniques, the distribution of questionnaires, and focus group discussions (FGD) that invited research samples. One example of the questions used in the interview and questionnaire was related to student interest in the types of Qur'an learning innovations, the number of percentages, and their class divisions. The determination of the object of the interview is carried out with the snowball system model, and the researcher continues to develop interview guidelines for its implementation. The data collection period ranges from September to November 2021. This research is a narrative review in the form of preliminary research targeting the segmentation of millennials, namely students. This research will focus on analyzing student needs related to digital Qur'an learning as a preliminary study.

### 3 RESULT AND DISCUSSION

In this sub-theme, the researchers elaborate on user needs analysis using the Qur'an learning media based on the force field perspective. The considerations used by researchers regarding the selection are motivated by the novelty of perspectives and the availability of references related to the perspectives. Analysis through a force field perspective is used to look more comprehensively at changes in the community situation (Mahmuda et al. 2019). The emergence of two poles of response in seeing a difference, that is, the pole that supports the change and the pole that resists change, are two things that are markers of force field analysis. Reviews based on force fields are expected to strengthen the poles of the potential strength of a product and minimize the poles of the product's weakness.

This analysis is an effective method for obtaining a comprehensive picture of the various dimensions of viewing a product. It also assesses the sources of strength, both supporting and opposing forces (Bandura 2002). Furthermore, force field analysis provides analytical information about the results of making a decision, including planning and implementing a change program (Shrivastava et al. 2017; Toves et al. 2016). The main target of using force field analysis is that researchers can find ways to reduce the inhibiting factors (low interest in Qur'an literacy in the millennial generation) and look for opportunities to increase the driving factors (openness of access to technology and digital literacy). The following are the steps taken in the force field analysis (Mahmuda et al. 2019).

#### 3.1 *Setting goals*

The purpose of innovation in learning the Qur'an is to help students, particularly the community, improve their Qur'an literacy skills. The learning process of the Qur'an is presented in the form of digital modules and video tutorials from well-known academicians.

#### 3.2 *Identification of the driving and barrier forces*

Based on the identification made by the researchers, several driving and inhibiting variables are presented in Table 1.

Table. 1. Driving and inhabiting variables.

No	Driving Variables	No	Inhibiting Variables
1	Technology-users friendly	1	Low interest in Qur'an literacy in the millennial generation
2	Digital technology is always used in everyday life (smartphones)	2	Introducing the Qur'an digital learning application to the millennial generation as a new application

### 3.3 *Creating strategic ideas*

Responding to the driving variables in the millennial generation, who have low Qur'an literacy skills and high interest in digital technology, the researchers devised a strategic idea by using mobile phones (digital learning) as a medium for learning the Qur'an for its users. Through this digital Qur'an, users will be facilitated in learning and deepening the Qur'an. With its flexibility, this innovation may help improve Qur'an literacy skills in the millennial generation so that learning media using mobile phones (mobile learning) is feasible to develop.

## 4 CONCLUSION

The development of this research is directed at optimizing the ability to read the Qur'an with a focus on Islamic Religious Education Courses. The purpose of innovation in learning the Qur'an is to help students, particularly the community, improve their Qur'an literacy skills. The learning process of the Qur'an is presented in the form of digital modules and video tutorials from well-known academicians. Responding to the driving variables in the millennial generation, who have low Qur'an literacy skills and a high interest in digital technology, the researchers devised a strategic idea by using mobile phones (mobile learning) as a medium for learning the Qur'an for its users.

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# Exploring the pre-service teacher's professional competencies through online practicum

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**ABSTRACT:** The importance of social media as a medium for social interaction, communication, and marketing is evolving. A growing number of firms in a variety of industries have already incorporated or intended to integrate social media applications into their marketing campaigns, customer service, and other operations related to helping them in engaging with their consumers. Higher education institutions show increased interest in the potential of social media as a tool for disseminating information and engaging stakeholders. This study investigated the utilization of social media platforms as a medium for sustaining effective communication at Bicol State College of Applied Sciences and Technology (BISCAST) amidst the COVID-19 pandemic. The study used a quantitative case study research approach in which data from Facebook's key metrics were analyzed and described. The number of engaged stakeholders on the BISCAST Facebook page increased when the enhanced community quarantine was implemented amidst the pandemic. It was also revealed that parents, students, and teachers follow the Facebook page for news and announcements, especially with regard to enrollment updates and information. The results showed that social media usage promoted stakeholders' involvement in the academic institution. Students also used social media to build an online community and support each other. It can also be noted that different stakeholders, like parents, students, and teachers, participated in social media discussions, which contributed to sustaining effective communication channels. The results confirm that proper social media usage could promote a new era of social learning, social presence, and an alternative platform to foster online learning.

## 1 INTRODUCTION

Organizational use of different communication channels like social media is skyrocketing. Organizations are now creating and maintaining different communication channels to increase their social network visibility, increase interest in their organizations, and create interactions with the online public. Most research on social media usage is conducted from an individual standpoint, while others are conducted from an organizational standpoint.

Different communication channels have grown as essential means of communication worldwide, and their widespread use has altered how people communicate and engage online. Communication channels such as social networking sites, blogs, vlogs, instant messaging, and virtual communities are evidently redefining how individuals and organizations connect and how organizations reach their audiences and communicate with one another. It has become a vital part of practically all industrial sectors' plans, and higher education institutions also use it to communicate with a large audience. This can also be attributed to the fact that these communication channels have replaced traditional forms of communication for the younger generation.

Communication channels are placed at the core of the human experience. Apart from using social media in marketing, it can also find applications in interaction, teaching-learning, awareness, and communication. Social media enables educational institutions to provide stakeholders with information about institutional news, events, new policies, job vacancies, new research programs, and alumni engagement swiftly and conveniently. Social media provides a perfect platform for highlighting new courses and campus facilities to attract more students. With the majority of the student crowd present on social media, it provides organizations with a platform to promote activities, receive feedback, and start conversations. It provides a better way to connect with parents and keep them up-to-date. Thus, social media serves as an essential medium for connecting students, teachers, parents, alumni, and other stakeholders. It also helps review user-generated comments and content related to all aspects of the provision of higher education services (Scullion & Molesworth 2016). Undoubtedly, 21st-century students are active, digitally savvy, and better decision-makers whose expectations, motives, and experiences are socially constructed (Kandiko & Mawer 2013). Therefore, the social media landscape creates opportunities for HEIs to amplify psychological engagement with students and increase influence by following student-to-student conversations (Ashley & Tuten 2015).

Technological advancements transform how crisis management professionals and researchers view, interact with, and disseminate information to affected communities in a crisis. The evolution of the mobile phone and other mobile technologies, computers, Internet access, and digital video equipment is reshaping the network communications framework and how we connect. A 2010 Pew Internet study found that nearly one-third (31%) of online adults use platforms such as blogs, social networking sites, online video, text messaging, and portable digital devices (Smith 2010a). These new media platforms are low-cost or free forums for expressing ideas, information, and opinions; they offer more opportunities to communicate and new avenues for global outreach in crisis communication (Olayinka & Philip 2019).

Higher education institutions' core audience is this youthful generation. According to 2017 figures, the average time spent on the mobile internet by millennial users worldwide is 223 minutes per day, quadrupling from 2012 to 2017 (Nagy 2017). This demonstrates young people's significant reliance on the internet as part of their daily lives. In the COVID-19 pandemic era, the shift to digital modes of teaching and learning is moving quickly. The worldwide pandemic of COVID-19 has presented unprecedented challenges to traditional or face-to-face education. Countries have implemented steps to reduce big crowd gatherings and maintain physical and social distance to contain the viral outbreak. As a result, governments have pushed all classes away from face-to-face instruction and toward online instruction. However, many undeveloped countries, like the Philippines, lack technological platforms and institutional online learning management systems (LMS) for communication with students and faculty members. As a result, they lack the complete set of features to assist the online learning process. Thus, for the first time, both staff members and students in many developing nations must communicate online for academic purposes using free social media sites like Facebook.

Communication channels such as social media sites can provide schools with an excellent opportunity to communicate with their students to boost online learning. The study capitalizes on students, academic staff, and other HEI stakeholders on these social sites to create engagement and sustain successful communication, which adds to educational quality management. Thus, the current study investigates the utilization of social media platforms as a medium for sustaining effective communication at Bicol State College of Applied Sciences and Technology (BISCAST) during the pandemic period. Furthermore, the students' perceptions of Facebook as a medium for sustaining effective communication and engaging stakeholders were discussed.

## 2 OBJECTIVES OF THE STUDY

This study examines data from the page of BISCASST with an emphasis on the stakeholders' engagement through a social media platform as a medium for sustaining effective communication in a higher education institution. Specifically, the study determined the number of engaged stakeholders on the BISCASST Facebook page and explored the students' perception of the utilization of social media in education for effective communication channels.

## 3 METHODS

Since this study examines the data from the page of Bicol State College of Applied Sciences and Technology with an emphasis on the utilization of social media in education for effective communication channels, the researcher applied a quantitative case study approach to research. Specifically, the study determined the number of engaged stakeholders on the BISCASST Facebook page and explored the students' perception of the use of Facebook as a medium for sustaining effective and engaging stakeholders. Scholars such as Saldana (2011) have confirmed that quantitative studies, including a case study (Creswell & Poth 2016), aim to uncover the lives of humans, including activities, experiences, and phenomena where descriptive data are dominantly used, rich, and very detailed. Typically, a case study puts a person, community, or organization as the focus of the study (Creswell & Poth 2016). Here, the study captured the utilization of Facebook as a medium as being the case.

Moreover, five undergraduate classes of Bicol State College Applied Sciences in the Philippines participated in this study. For the quantitative data of the study, the researcher gathered and analyzed the key metrics of the BISCASST Facebook page from November 2019 until October 2020. Meanwhile, the researcher interviewed the participants virtually through Facebook Messenger in order to maintain physical distancing. The interviews lasted for approximately 3–5 minutes for each participant, and the participants' responses were sent via messenger voice notes or text messages. The process of collecting the data was conducted from January to May 2021.

The collected data were thematically analyzed by familiarizing the data, coding, memoing, generating themes, relating themes, and writing them up. Here, the codes and themes were evolved in accordance with the features and limitations of Facebook as a medium for communication.

## 4 RESULTS AND DISCUSSION

### 4.1 *Stakeholders' engagement in the BISCASST facebook page*

Bicol State College of Applied Sciences and Technology has had its Facebook page since June 25, 2011. The said page was created for the sole purpose of publishing announcements, milestones, and events from the college. In the study, key metrics of the BISCASST Facebook Page were analyzed with regard to stakeholders' engagement during the pre-pandemic period, the first wave of the pandemic, and the new normal. Figure 1 shows the 12-month stakeholders' engagement on the Bicol State College of Applied Sciences and Technology Facebook Page.

As shown in Figure 1, the number of engaged stakeholders suddenly increased in March 2020, then slowly decreased until May 2020, when it suddenly reached its peak with 24,032 engaged stakeholders for July. These results may have been attributed to the events during those months. In the Philippines, enhanced community quarantine and community





Figure 1. Stakeholders' engagement in the BISCAST facebook page.

lockdowns were implemented, which made a number of stakeholders worried about the sudden cessation of academic activities. Thus, the students and faculty members relied on online communication for announcements and updates, increasing the number of engagements on the page. Meanwhile, June is a month for the announcement of enrolment in a state college just like BISCAST, which means students will be sending messages for inquiries regarding the enrolment process and requirements. Furthermore, based on the analysis of users' comments and inquiries on the page, students, as well as their parents, are worried about the process of enrolment amidst the pandemic, who equally follow the page and inquire regarding academic activities.

As shown in Figure 2, the BISCAST Facebook Page engagement of stakeholders for the pre-pandemic, during the pandemic, and the new normal. From the figure, before the pandemic (November 2019–February 2020), there were only 5397 engaged stakeholders on the BISCAST Facebook page. Then, during the pandemic (March 2020–June 2020), its number multiplied by approximately nine times with its current 48,749 engaged stakeholders, and during the new normal (July 2020–October 2020), its number is 45,521.

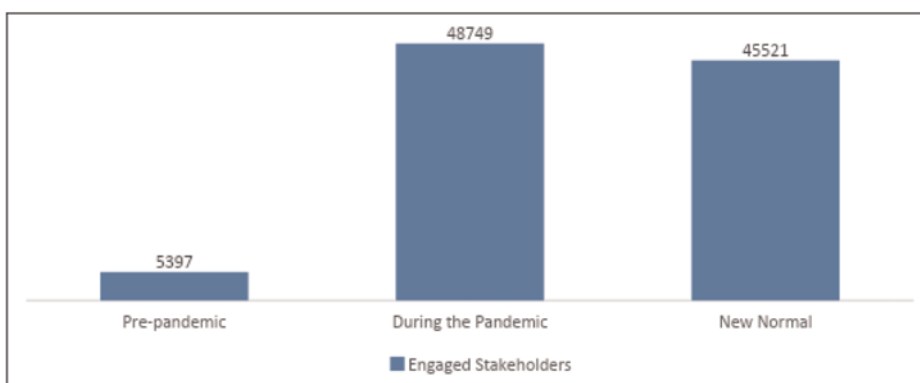


Figure 2. Engagement of stakeholders on the BISCAST facebook page before, during, and after the pandemic.

This result may have been attributed to the stakeholders' anxiousness about the implications of the pandemic on education. People are hungry for information regarding the changes in education. Once the new normal is introduced and plans for the continuation of academic activities amidst the pandemic are put into place, stakeholders' worries decline

slightly, which thus affects the number of engagements of stakeholders on the BISCAS Facebook page. Furthermore, new strategies for communication for academic purposes are integrated similar to Google Classroom, LMS, and others, so students' engagement in social media decreases.

Figure 3 shows the number of lifetime total likes recorded for the BISCAS Facebook page. As shown in the figure, from November 2019 until October 2020, the number of page likes steadily increases. Meanwhile, Figure 4 shows the record for the daily Facebook user reach of the said page has the highest record in July 2020, followed by April 2020, and third is the month of September 2020.

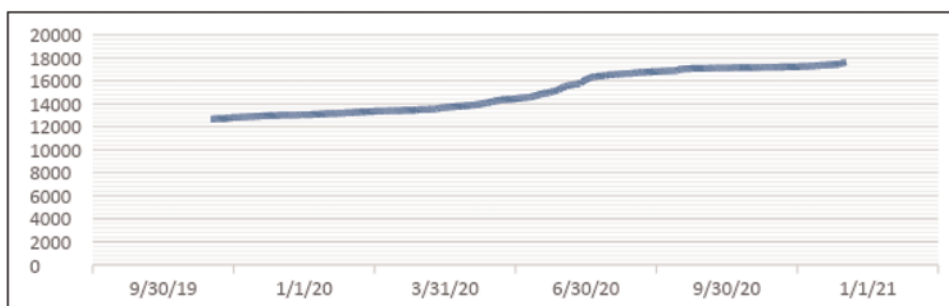


Figure 3. Monthly lifetime total likes record of the BISCAS facebook page.

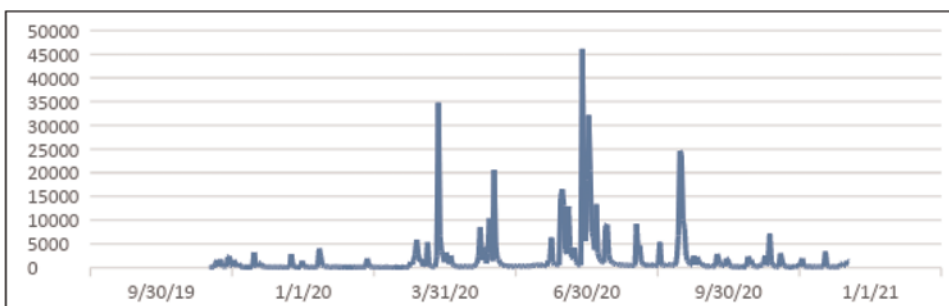


Figure 4. Daily total reach record of the BISCAS facebook page.

This result may have been attributed to students' interest in the updates regarding class enrolment and the start of classes. Before the COVID-19 pandemic, classes in SUCs started in August. However, due to the challenges brought by the pandemic, the Commission on Higher Education (CHED) has released guidelines on continuing education amidst the COVID-19 pandemic. Thus, BISCAS, as a premier state college, has taken into account the available resources for them to reach their stakeholders amidst the pandemic and the constriction of physical social distancing. One of its emerging responses is to use the BISCAS Facebook page as a communication channel, providing stakeholders with up-to-date information and responses on currently offered programs and academic activities.

This indicates that by using the BISCAS Facebook Page, the college has delivered information to its stakeholders amidst the pandemic and also provided them a way to reach out to the academe. Similarly, the college provides students, faculty, and other stakeholders a communication channel where they can send their inquiries and have access to news and announcements, especially with regard to enrollment updates and information.

The results revealed in this study align with the study of Kumar and Nanda (2019), where social media sites and apps are used for continuous engagement in higher education. Similarly, the study of Sobaih et al. (2020) is aligned with the results gathered in the current study, where higher education institutions are using different communication channels in response to the need to sustain communication between the academe and its stakeholders. Furthermore, Veil et al. (2011) have highlighted that in times of crisis, available communication channels would be a great aid in sustaining engagement within the organization or institution.

#### 4.2 *Students' perception of the utilization of social media in education for effective communication channel*

The researcher conducted virtual interviews to gain a deeper understanding of the perceptions of the use of social media in education for effective communication channels. The information gathered from the interviews was analyzed and the themes that emerged were that social media has its advantages and disadvantages in education as an effective communication channel. Table 1 shows the summary of the virtual interviews conducted.

Table 1. Summary of the virtual interviews.

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>● Accessible</li> <li>● Free</li> <li>● Varied features (can make phone calls, video calls, share files, share photos and videos, can create pages, groups, etc.)</li> <li>● With a wide range of users</li> </ul>	<ul style="list-style-type: none"> <li>● Security Management</li> <li>● There is no file management like in learning management systems.</li> <li>● Lack of review of information being uploaded or posted</li> <li>● Open for all, which means that the security of profiles might be compromised.</li> </ul>

Most of the participants believed that the utilization of social media in education was an effective communication channel. Most of the participants believed that the utilization of social media as a communication channel between the academe and its stakeholders was quite effective. Obviously, with different social media platforms being present over the years, it has served as a platform for different engagements. It is quite effective in sustaining communication and engaging stakeholders because it can reach a wide population and is readily accessible around the world. Using it as a medium of communication will reach millions of users and will effectively engage them in the discussion. It also contains a number of communication functions, including the ability to send messages, exchange files, photographs, and videos, and make audio and video conversations.

Most of the participants believed that the utilization of social media in education is an effective communication channel. Most of the participants believed that the utilization of social media as a communication channel between the academe and its stakeholders was quite effective. Obviously, with different social media being present over the years, it has served as a platform for different engagements. It is quite effective in sustaining communication and engaging stakeholders because it can reach a wide population and is readily accessible around the world. Using it as a medium of communication will reach millions of users and will effectively engage them in the discussion. It also has various features for communication purposes where you can share files, photos, and videos, make audio and video calls, and send messages.

Though there are several advantages to Facebook, one must be aware of its limitations. Facebook cannot replace the experience of talking physically with peers, families, and

friends. However, with the new normal being implemented, it can be a medium for sustaining effective communication between an institution and its stakeholders. Also, with its various features and possible usage, navigating the wealth of data to determine legitimate information versus misinformation can be difficult because Facebook doesn't always use peer-reviewed information or disclose conflicts of interest. In times of pandemic, posting opinions rather than facts can lead to inaccurate information, and misinformation can lead to hysteria and unneeded effects on mental and physical well-being. However, with cautious and responsible use, Facebook and other social media sites and apps can be invaluable communication and learning tools for now and in the future.

These results are similar to those of the study of Senapati et al. (2020), where social media had a positive impact on students' learning amidst the COVID-19 pandemic. The paper by Senapati et al. (2020) outlined the use of different social media tools in learning and its possible impact on education amidst the COVID-19 pandemic and beyond it. Furthermore, in the paper, social media sites are discussed as being integrated successfully into the curriculum, which would have a greater positive impact.

## 5 CONCLUSION AND RECOMMENDATION

Communication channels like social media sites offer a significant opportunity to higher education institutions like Bicol State College of Applied Sciences and Technology in terms of stakeholders' engagement and sustaining communication amidst the challenges of the COVID-19 pandemic in a very constructive way. Furthermore, the ongoing pandemic brought to light the need for online tools to sustain an institution's quality management system, including integrating tools that will engage stakeholders in academic activities and discussions. Similarly, as a commonly used social media site and app by the BICAST students and other stakeholders, Facebook provides sustainable communication between the academe and its stakeholders. However, every application and platform has its limitations. As perceived by the students, Facebook provides a wide range of features that are free and easy to use as a communication tool. However, security and access to factual information are a concern.

Thus, it is recommended that HEIs establish a policy regarding the utilization of Facebook as a medium for engaging stakeholders and sustaining effective communication. Similarly, HEIs may integrate other social media tools into the institute to enrich the experience of students, faculty, and other stakeholders throughout their journey as part of the college. Furthermore, the institutes can develop social media campaigns and help students gain the most out of their education. Choice of specific channels can also lead to focused attention on a specific tool for a particular purpose and avoid unnecessary budgets and efforts.

Building up a follower base is not a difficult step to take because it does not require a deep strategy to attract them to like and subscribe to the page. The college has built a network of communities that recognize the presence and importance of its official fan page. Their participation in viewing, liking, and posting reactions and other forms of messages shows a robust statistical result that can provide a variety of analyses and interpretations based on needed output. However, the page moderator, or even the administrator, cannot filter the legitimacy of every individual's account and does not guarantee that they are a registered stakeholder of the college.

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# Does demographic background matter on students' mathematical problem-solving based-integrated STEM?

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**ABSTRACT:** The trend of interdisciplinary mathematics that integrates STEM answers the challenge of 21st-century skills but raises issues of student difficulty and achievement gaps among students. The predicted reasons are the result of the demographic background. School location and age are the debatable demographic backgrounds that created the difference in students' mathematics problem-solving skills. The present study examines the significant differences in student mathematical problem-solving skill-based integrated STEM based on gender and school location. It was conducted on 116 7th-grade students from rural and urban areas in Indonesia ( $M = 13.09$ ,  $SD = 0.61$ ). The problem-solving skills were assessed using an essay scenario-based test followed by a demographic background questionnaire. The data was analyzed by using an independent sample t-test. Results revealed no significant difference in students' mathematical problem-solving skills based on integrated STEM based on gender in rural and urban schools. In addition, there were significant differences between students who attend urban and rural schools in their mathematical problem-solving skills-based integrated STEM and urban outperforming those from rural schools. The difference was detected in female participants. Further study suggests enlarging the sample size and involving more varied participants.

## 1 INTRODUCTION

Mathematics is fundamental to learning other subjects and survival knowledge in daily life (Junpeng et al. 2020; Kesorn et al. 2020). From elementary to high school, mathematics became a required subject. The impact of global economic transformation transforms the trend of monodisciplinary mathematics into interdisciplinary mathematics by incorporating STEM (Kelley & Knowles 2016; Maass et al. 2019).

Shifting mathematics into an interdisciplinary-based is raising issues regarding students' difficulties and achievement gaps. Students encounter difficulty in mono-disciplinary and interdisciplinary mathematics problems, including understanding a problem, translating the problem into mathematical words, and using mathematics concepts (Phonapichat et al. 2014; Siniguan 2017; Tambychik & Meerah 2010). Several affective, cognitive, and demographic factors could affect these issues.

Studies examining the factors influencing differences in students' problem-solving skill-based integrated STEM were rarely found (Bartholomew & Strimel 2018), primarily related to the demographic background (Nepal 2017). Researchers tend to focus on cognitive and affective reasons rather than demographic reasons; indeed, it could be an essential contribution to predicting students' gaps in mathematics problem-solving achievement

(Nepal 2017). Demographic refers to district characteristics of a population, e.g., race, age, sex, Etc. The controversial demographic background that is responsible for problem-solving skills differences is gender, and school type since the results of previous studies was not inconsistent and are still debatable (Lee & McIntire 2000; Li et al. 2018; Lindberg et al. 2010; Ramos et al. 2021; Williams 2005).

The location of school segregation is often accompanied by school segregation (Tomul et al. 2021). If the school's location is in a rural area, it will affect the quality of the school (Ramos et al. 2021). The socio-cultural and socio-economic characteristics of a residential area where the school is located influence academic achievement (Tomul et al. 2021). Hence, it is crucial to examine the school location as a factor that might create the differences in students' mathematics problem-solving skills based on integrated STEM.

The most debatable factor influencing mathematics skills is gender (Zhu 2007). Gender differences in mathematics performance have received much attention in the psychological, educational, and sociological fields (Li et al. 2018). Research about gender differences in mathematics was found in the 1970s (Leder 2019). However, in the 21st century, many results were discovered. Some argue that STEM is stereotyped as a male domain based on a biological perspective, and some argue that gender equality in mathematics is based on a sociological perspective (Catsambis 2005; Davies & Spencer 2005; Halpern et al. 2005; Lindberg et al. 2010). Therefore, it is interesting to contribute by examining whether there is a gender difference in solving mathematics problems based on integrated STEM to prove which theory is applicable nowadays.

According to the aforementioned critical reasons, the present study aims to examine the significant difference in students' mathematics problem-solving skills integrated STEM based on gender and school location. The results will be helpful as a fundamental theory to improve students' mathematical problem-solving skills, to understand the source of inequality (if any), and to improve our understanding of how students learn.

## 2 THEORETICAL BACKGROUND

The variable predicting achievement is the characteristic of the school locations within the country (Ramos et al. 2021; Tom et al. 2021). Students who attend rural schools have a worse educational outcome in mathematics, science, and reading than students who attend an urban school in Columbia (Ramos et al. 2021). Another research across countries using PISA 2009 data concluded that students in rural schools had significantly low mathematics scores in 14 of 24 countries (Williams 2005). In addition, research in Nepal examined the effect of gender and school location on mathematics thinking (including problem-solving) and mathematics achievement (Nepal 2017). The results revealed there were significant differences between urban and rural students in mathematics thinking skills ( $t = -5.11$ ,  $p < .001$ ) and mathematics achievement ( $t = -4.45$ ,  $p < .001$ ).

There were different patterns and variations in the finding of mathematics achievement in other countries, with rural school students outperforming urban schools (Lee & McIntire 2000; Williams 2005). Several factors could predict these variations, namely lack of instructional resources (e.g., facilities, materials, programs, Etc.), lack of professional training (e., teacher training), and lack of progressive instructions (Lee & McIntire 2000).

### 2.1 *Gender and mathematics skills*

Research about gender differences in mathematics was begun in the 1970s with the work of Fennema and her colleagues (Leder 2019). They stated gender differences in the upper elementary and early high school, with boys favoring higher-level cognitive tasks in mathematics. In the 1980s, the programs of gender equality in mathematics education were raised until, in 1990, Hyde et al. did a meta-analysis that reviewed 100 studies between 1963 and

1988. Results revealed (1) gender differences in mathematics performances were negligible ( $d = -0.05$ ) and favored females; (2) girls did slightly better than boys in computation, and there were no gender differences in problem-solving for elementary and middle school levels, but males outperformed in college-level; (3) the effect size of gender differences declined over the years. In the 2000s, the meta-analysis study by Lindberg et al. (Lindberg et al. 2010) proposed strong evidence of gender similarity in mathematics performance. They used 242 studies from 1990 to 2007 and represented the data of 1,286,350 people. The results concluded (1) the gender difference weighted overall studies were small ( $d = 0.05$ ); (2) few statistically significant differences in performance; (3) slight gender differences in complex problem-solving were found in high school with boys outperforming girls; (4) the effect size of gender differences decreased over time. Another meta-analysis study using data in Beijing stated that there were no gender differences in mathematical achievement among grade 5 students; relatively small differences exist in grade 8 (Li et al. 2018).

The reviews' results related to gender similarity in mathematics were supported by several studies (Ajai & Imoko 2015; Nepal 2017). Nepal (2017) concluded that there were no gender differences in mathematics thinking skills ( $t = -454$ ,  $p = .65$ ), problem-solving ( $t = -.480$ ,  $p = .632$ ), and mathematics achievement ( $t = -734$ ,  $p = .463$ ). Ajai & Imoko (2015) stated that there was no gender difference in algebraic problem-solving skills.

Gender similarity in mathematics is reached through education by giving equal learning opportunities and educational choices (Catsambis 2005; Halpern et al. 2005). Reviewing and expanding the curriculum to incorporate the needs and interests of a broader range of students is also one of the efforts to address gender similarities in mathematics (Leder 2019).

Gender differences occurred in mathematics because of a stereotype of STEM as a male domain. Based on social learning theory, stereotypes influence competencies, beliefs, and self-efficacy (Lindberg et al. 2010). Parents' and teachers' stereotypes could predict children's perceptions of their competencies (Davies & Spencer 2005). Hence, because of stereotypes and beliefs, females have limited interest in advanced mathematics courses (Catsambis 2005; Davies & Spencer 2005).

Even though they are in opposition to the data, stereotypes and biases still exist (Davies & Spencer 2005; Halpern et al. 2005). Researchers have shown that men score better in math and science, yet more women are entering careers that demand more math proficiency than men (Halpern et al. 2005). However, from a biological standpoint, it makes sense that men performed better in mathematics than women.

Visual-spatial skills are essential in mathematics problem-solving (Halpern et al. 2005). The development of these abilities is affected by hormones and brain structure (Halpern et al. 2005; Zhu 2007). Females having a large corpus callosum were correlated with a lower degree of lateralization (Zhu 2007). The lower degree of lateralization means the left and right hemispheres are more symmetric, which better influences vocal performance. Males have a more lateralized brain structure, which is more crucial for spatial tasks.

Sex hormones also influence the development of the brain. The hormone testosterone found in men decreases the growth of the left hemisphere (Halpern et al. 2005). Due to the right brain's predominance, men typically perform well in various mathematical thinking and spatial tasks.

### 3 METHOD

The study was conducted on 116 7th-grade students ( $M$  age = 13.09,  $SD = 0.61$ ) in urban ( $n = 38$ ) and rural ( $n = 78$ ) areas in East Java, Indonesia. We selected the schools with random classes. A rural school is defined as a school located in the countryside. The participants are homogenous ethnics (95.7% Javanese, 0.9% Batak, and 3.4% Madurese), including 38 boys and 78 girls.



Mathematical problem-solving skills integrated STEM were assessed by using an essay scenario-based problem test. The test is related to the environmental management context. There are three scenarios with a challenge in every scenario. To solve the challenge, students must answer eight prompting questions in every scenario. The prompting questions aimed to explore every step of students' problem-solving process, including understanding information and problems, making hypotheses, designing a prototype, evaluating alternatives, carrying out the plan, and drawing a conclusion. The score of the question is ranged between 0 for a blank answer and 5 for a correct and complete answer. The demographic information was assessed using a questionnaire and a test using an online platform. It includes grade, school location, type, gender, age, and ethnicity. The test and questionnaire were distributed over three hours. The objectivity of data collection (environment, tools, Etc.) was controlled by teachers.

The mean score of students' tests was used as a score of students' problem-solving skills. We analyze using both general and detailed procedures. The general procedure examines the gender and school location differences in mathematics problem-solving skills-based integrated STEM regarding gender and school location. The detailed procedures are: (1) Select each school location and analyze based on gender to find the difference in mathematics problem-solving skills integrated STEM. This phase finds the significant difference between female and male urban school students in performing mathematics problem-solving. The same procedure was applied to rural school students); (2) Select each of the genders and analyze based on school type to find the difference in students' mathematics problem-solving skills-based integrated STEM (e.g., analyze the significant differences between urban and rural schools' male students). To analyze the significant differences in students' mathematical problem-solving skills-based integrated STEM, we applied an independent sample t-test. It was performed by using the SPSS 25 application.

#### 4 RESULTS AND DISCUSSION

The first analysis examined gender differences in students' mathematical problem-solving skills-based integrated STEM among 7th graders. Levene test results were a significant difference, so equal variance is not assumed ( $F = 8.05, p < .01$ ). The result was no significant differences between females ( $M = 3.02, SD = 0.77$ ) and males ( $M = 2.80, SD = 1.06$ ),  $t(56.52) = 1.16, p = .25$ . It means that the school already implemented equal teaching and learning processes, opportunity, and treatment. Each class can only show it for men and women since it still appears in several private schools. Moreover, the task, homework, assessment, facility, and other opportunities were equal. It was supported by several studies that stated there was gender equality in mathematics because of equal opportunities and educational choices (Ajai & Imoko 2015; Halpern et al. 2005; Leder 2019; Nepal 2017).

Regarding the school location, the result of the Levene test concluded that there was a significant difference. The Levene test means that equal variance is not assumed ( $F = 7.55, p < .01$ ). The result of the independent sample t-test revealed there were significant differences between urban students ( $M = 3.21, SD = 2.81$ ) and rural students ( $M = 2.81, SD = 0.93$ ),  $t(96.483) = 2.58, p < 0.05$ . Urban school students outperformed rural school students in mathematics problem-solving skills. The result was supported by research that concluded rural school students had lower mathematics achievement and problem-solving skills (Nepal 2017; Ramos et al. 2021; Williams 2005). It could be because of differences in instructional resources, e.g., facilities. Table 1 describes more detailed results of the independent sample t-test.

We will detail the score dispersion and variability in mathematics problem-solving based on gender and school location by using a boxplot in Figure 1.

Figure 1a explains the box plot comparison between females and males in mathematical problem-solving skills based integrated STEM. The black line in the blue box represents a median. The blue box explains the range of data from quartile 1 to quartile 3. The median

Table 1. Result of independent sample t-test on students' mathematical problem-solving skills-based integrated STEM.

	Gender		School location	
	Female	Male	Urban	Rural
<i>N</i>	78	38	38	78
<i>M</i>	3.02	2.80	3.21	2.81
<i>SD</i>	0.77	1.06	0.68	0.93
<i>F</i>		8.05		7.55
<i>P</i>		.005		.007
<i>T</i>		1.16		2.58
<i>Df</i>		56.52		96.483
<i>P</i>		.25		.01

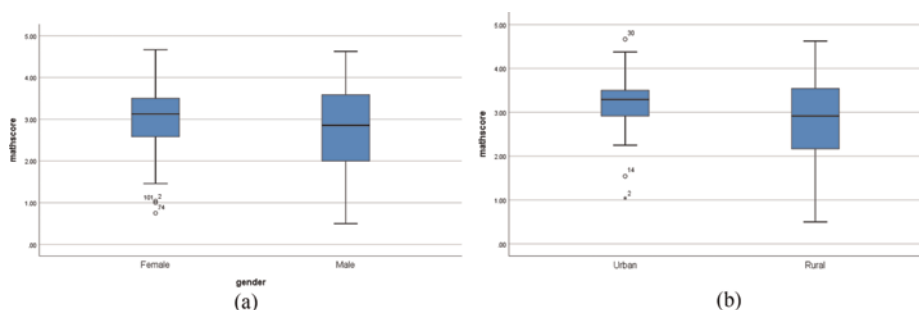


Figure 1. (a) The boxplot of the mathematics problem-solving Score based on gender. (b) The boxplot of mathematics problem-solving score based on school location.

score of females and males were 3.12 and 2.85, respectively. There was a difference between the medians, but they were not significant. 75% of female students' scores were between 2.57 and 3.51.

In comparison, 75% of male students' scores were from 1.97 to 3.62. There were three outlier scores in female participants. The outlier is an observation that lies at an abnormal distance from other values in a random sample of a population.

The outlier increases the variability of data but decreases statistical power, which can be the reason for being statistically insignificant. To determine the outlier, we multiplied the interquartile by 1.5, then subtracted it by quartile one or added it by quartile 3. The result was 1.41, subtracted by quartile 1; we received 1.16. Hence, scores below 1.16 are categorized as outliers. Participants 2, 74, and 101 scored 1.04, 0.75, and 1.00, respectively. These participants might be why the statistics need to be more significant.

The median score of urban and rural students were 3.29 and 2.91, respectively (see Figure 1b). There was a significant difference between the medians. 75% of urban students' scores were between 2.92 and 3.51. In comparison, 75% of rural students' scores were between 2.16 and 3.55. There were two mild outlier scores in urban participants. The score between 2.03 and 4.4 as mild outliers. Participants 14 and 30 had a score of 1.54 and 4.67, respectively. The extreme outlier was detected in participant 2 with a score of 1.04. The extreme outlier is calculated from the interquartile score multiplied by 3. A score below 1.14 was detected as an extreme outlier.

Since there is a significant difference based on school location, we analyzed which participants contributed to the differences. Hence, we analyzed whether there are significant

differences between males (and females) in urban and rural schools performing mathematics problem-solving test-based integrated STEM. The result showed there were no significant differences between males in urban ( $M = 3.05$ ,  $SD = 0.78$ ) and males in rural schools ( $M = 2.66$ ,  $SD = 1.17$ ) in performing mathematics problem-solving test-based integrated STEM,  $t(33.541) = 1.22$ ,  $p = .23$ . The Levene test showed there was a significant difference, which means that equal variance is not assumed ( $F = 4.38$ ,  $p < .05$ ). However, there was significant differences between females in urban ( $M = 3.30$ ,  $SD = 0.63$ ) and females in rural schools ( $M = 2.89$ ,  $SD = 0.80$ ) in performing mathematics problem-solving test based integrated STEM,  $t(58.844) = 2.43$ ,  $p < .05$ . Females in urban school outperformed in mathematics problem-solving test based integrated STEM compared to females in a rural school. The Levene test explained there was a significant difference. This test means that equal variance is not assumed ( $F = 5.04$ ,  $p < .05$ ). Hence, we concluded that the school location difference in mathematics problem-solving skills based on integrated STEM in a whole sample is because of the different skills in female participants. The score dispersion and variability in mathematics problem-solving based integrated STEM score based on school location in each male and female participant is described in Figure 2.

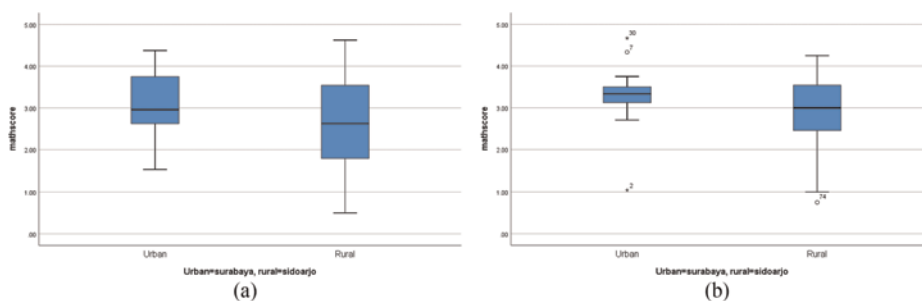


Figure 2. (a) The boxplot of male students' mathematics problem-solving score based on school location. (b) The boxplot of female students' mathematics problem-solving score based on school location.

Figure 2a explains that the median mathematics problem-solving test-based integrated STEM score of male students in urban and rural areas were 2.96 and 2.63, respectively. 75% of male students' scores in urban and rural areas were from 2.52 to 3.79 and from 1.73 to 3.56, respectively. It was obvious that the median score of female urban and rural students was higher when compared to male students, which were 3.33 and 3.00, respectively. The 75% scores of female students from urban and rural schools ranged between 3.10 and 3.5 and between 2.40 and 3.56, respectively. However, there were three outlier scores in female urban school participants. In this case, the mild outlier is a score above 4.1 and below 2.5. The extreme outlier scored above 4.7 and below 1.9.

We hypothesized that if there was no gender difference in mathematical problem-solving in a whole sample, there should be no gender differences in each of the rural and urban school students' mathematics problem-solving skills. To prove it, we conduct an independent sample t-test. Result revealed there were no significant differences between females ( $M = 3.30$ ,  $SD = 0.63$ ) and males in an urban school ( $M = 3.05$ ,  $SD = 0.78$ ),  $t(36) = 1.04$ ,  $p = .31$ . A similar result was detected in the rural school participants. There were no significant differences between females ( $M = 2.89$ ,  $SD = 0.80$ ) and males in rural schools ( $M = 2.66$ ,  $SD = 1.17$ ),  $t(34.881) = 0.88$ ,  $p = .38$ . It gave strong evidence that males and females have equal problem-solving skills without considering the school location (Nepal 2017).

The present study has several limitations regarding the sampling method. There is a vast difference number of participants in rural and urban schools; the urban school has a small

number of participants. In addition, it is necessary to include participants from more than two different schools to hinder the bias. Moreover, the random sampling method will be better applied to choose the schools.

## 5 CONCLUSION

The demographic background matters in students' mathematical problem-solving skills based on integrated STEM. However, it cannot be detected in the case of gender in urban and rural schools. There was a difference in the mean of mathematical problem-solving scores based on gender, but the difference was insignificant. The sociological theory wins the argument that there are no gender differences in mathematics performance in the present study. The result contributes to the theory that no gender differences in students' mathematics performance in the 20th century because of similar opportunities in the educational system.

There was a significant difference in mathematical problem-solving skills based on integrated STEM based on school location. Students in rural schools had worse mathematics problem-solving skills-based integrated STEM than students in urban schools. The difference was detected in the female participants, with female students in urban schools outperforming female students in rural schools. The different quality of instructional resources in urban and rural schools was the reason for students' gap in mathematics performance.

There were no gender differences in students' mathematical problem-solving performance, but school location affected it. Hence, the results can be used as basic information for teachers and schools to suppress the reasons for these differences.

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# Engineering design process based on LMS: Trial on biophysics for pre-service science teachers

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**ABSTRACT:** This study aims to describe the Engineering Design Process (EDP) implementation in online learning using Learning Management System (LMS). This type of research is descriptive exploratory, surveying 27 prospective students in science education at the State University of Surabaya (UNESA). Data were collected by observation and documentation. Students analyze problems depending on EDP syntax in asking and researching the issue. While at the imaging, planning, creating, testing, and evaluating stages of the prototype and improvements, students can generate ideas to be used as problem-solving solutions in the form of engineering designs, providing a clear explanation of how the solution can optimally work for use. During online learning, the Moodle-based LMS can facilitate the overall EDP syntax. Suggestions for further LMS development need to consider program flexibility so that LMS users can access using cell phones in the learning process.

## 1 INTRODUCTION

The pandemic caused by COVID-19 has affected all aspects of the world, especially education (Amiruddin et al. 2022; Prahani et al. 2022). Learning activities must be changed to adapt to the pandemic (Herliandry et al. 2020; Hikmah et al. 2021). Educators and students are separated by distance due to the pandemic, but they still have to interact for the sake of the learning process. The pandemic period requires online learning processes to stop the spread of the virus (Morgan 2020). Learning done offline has turned into online. Online learning has advantages, including being more flexible in terms of time and location. However, it also has a weakness, for instance, it has less optimal communication than direct communication between teachers and students (Kim 2021). In addition, online learning is also limited to activities requiring students to experiment and develop projects (Putri et al. 2021).

The changes to a pandemic curriculum have created a Learning Management System (LMS) that can maintain connectedness between educators and students in the learning process (Almaiah 2020). One is Moodle-based LMS which is free and widely used by educational institutions. Moodle-based LMS has exclusive features and is expected to be able to support the learning process during the pandemic. The features include the main online class page and the page for each meeting, starting from meeting 1 to meeting 15. The online class page at the meeting is equipped with add and activity or resource features. This feature contains many

applications that lecturers can use as means and facilities for online learning. The activities consist of assignments, attendance, chat, and portfolio forums, and the resources consist of books, files, google meet, and URLs. The completeness of this feature depends on the purpose of e-learning, that is, managing online learning in a system, such as attendance, exams, assignments, course descriptions, syllabus, lesson plans, and materials taught (Haghshenas 2019).

In addition to the involvement of students in the classroom, the learning process also requires group activities, projects, discussion forums, and peer tutorials. It requires students to keep in touch even though they are outside of class hours (Adzharuddin 2013). This Moodle-based LMS aims to create a learning environment that facilitates the exchange of creative ideas and builds shared experiences that benefit the learning process (Veluvali 2020). Skills during the learning process are one of the areas that need to be considered for material mastery being studied. The Biophysics course is a science that integrates the concepts of physics and biology, so skills are an assessment that needs to be done. One of the skills in this course is the ability of students to create solutions that will be used as projects to overcome solutions.

The condition of online learning is one of the challenges for this project activity. The Engineering Design Process (EDP) approach is a learning that involves student activities in a project and prioritizes brainstorming to produce appropriate solutions. EDP directs students to think at higher levels, allowing them to predict and analyze problems during the project preparation (Fan 2017). In addition, learning with problems and solutions as a project also involves understanding students' concepts and activities (Bellaera et al. 2021; Wendell 2010). So far, the application of the EDP approach has involved students working in offline mode. The implementation of EDP is carried out for 3 weeks with the agenda of carrying out class discussions every three days (McFadden, J. & Roehrig 2018). Offline EDP makes it easier for teachers as facilitators to focus more on student activities scheduled to suit the learning objectives. During the pandemic, this cannot be done.

In contrast, EDP is necessary for teaching science contextually, with learning through making patterns, language used in the discussions, designing hypotheses, and considering counterfactual conditions (Heath 1999). During the pandemic, the online learning process, in general, can facilitate learning processes such as pre-pandemic learning (i.e., offline). Therefore, this study is focused on examining EDP in online learning with the help of Moodle-based LMS.

## 2 METHOD

The research will analyze and explore the learning of Biophysics courses implemented online using a Moodle-based LMS. The students involved in this course are UNESA's Science Education students' batch 2021, with a total of 27 people. They receive a 7-week Biophysics course with an EDP approach and a Moodle-based LMS facility that has been developed. This research uses the descriptive exploratory study method. It is a preliminary investigation of the relatively unknown field which aims to gain new insight. The stages of the research carried out are presented in Figure 1.

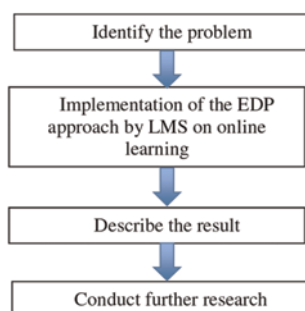


Figure 1. The flow of the research on the qualitative step.

### 3 RESULTS AND DISCUSSION

#### 3.1 Identify the problem

Learning during a pandemic becomes a challenge for biophysics courses. The characteristics of project-based courses make online learning apply innovations adapted to the conditions. EDP is project-based learning and has quite complete stages. Teachers choose this EDP approach in online learning to discover its implementation and results.

#### 3.2 Implementation of the EDP approach by LMS on online learning

The implementation of learning the Biophysics subject with an EDP approach, entirely online and assisted by a Moodle-based LMS, will be described into five parameters: course class structure, implementation of EDP syntax, instructor support, student responses, and evaluation. The performance of the online EDP syntax is presented in Table 1.

Table 1. Implementation of learning with the EDP approach in a Moodle-based LMS.

Syntax EDP	Purpose	Deliverables
Ask	Asking the student about projectile motion in everyday life activity. Students can identify the problem.	LMS Group Whatsapp Zoom Meeting
Research the problem	Students can analyze the problem and find a literate.	LMS Group Whatsapp Zoom Meeting
Imagine	Students can find several alternative design solutions and analyze the advantages and disadvantages of each design.	LMS Group Whatsapp Zoom Meeting
Plan	Students can determine a design that will be selected as a project design.	LMS Group Whatsapp Zoom Meeting
Create	Making the design according to the purpose of solving the problem.	LMS Group Whatsapp Zoom Meeting
Test and evaluate	Analyzing by trying the project results and analyzing the advantages and disadvantages of the design that has been made.	LMS Group Whatsapp Zoom Meeting
Improve	Redesign the project design to get the best results, then refine and retest the project until you get maximum results.	LMS Group Whatsapp Zoom Meeting

#### 3.3 Describe the result

Table 1 describes how EDP is facilitated through a Moodle-based LMS. Students write the identification results of the problems given by the lecturer. The analysis was carried out in



groups, and then the results were submitted to the LMS in the portfolio section of meeting one about relevant sources and the project to be carried out. After getting the material as a reference, the students report the results obtained by submitting them to the LMS in portfolio meeting 2. The students collect several alternative designs for the project and then analyze each design's advantages and disadvantages. The students submit the analysis results of some alternatives to the LMS part of the portfolio meeting 3. The students determine an alternative project design that will be used, considering effectiveness as a solution to the problem. The students make the first design draft and submit it to the portfolio section of the fourth meeting. The students design and make a prototype project according to the previous step. The students submit the prototype results, to the LMS, on the portfolio page at meeting 5. The students evaluate and test the performance of the prototype project from the first design and analyze its successes and shortcomings. They also take documentation and submit it to the LMS meeting portfolio on page 6. The students revise the plan and reanalyze the performance of the prototype project to get maximum results according to the solution to the problem. The students submit the final design results and the second test result documentation. If it is not appropriate, they have to repeat it until it produces a design most suitable for the solution to the problem. Then, the students submit these results to the LMS in the portfolio section at meeting 7. The first parameter is the course class structure consisting of the main page and containing descriptions of biophysics courses, profiles of members of the teaching team, and course class pages for 15 meetings equipped with essential competencies and indicators according to the meeting. The class structure of this course is equipped with exclusive features, which can be seen in Figure 1.



Figure 1. Application on a Moodle-based LMS.

The complete structure of this Moodle-based LMS is the minimum standard that facilitates the learning process (Govindasamy 2002). Implementing EDP syntax with Moodle-based LMS in the feature biophysics course consistently used for seven meetings is a portfolio. In this section, the lecturer as an instructor can regularly give assignments in every session, and the students can also respond quickly. The development of students' responses to their work every week can be seen in the documentation of tasks collected every week. This research uses seven syntactical structures, so each meeting contains a portfolio assignment bill based on EDP syntax.

This feature has been beneficial in implementing EDP syntax when online learning is conducted. Each Moodle-based LMS has its uniqueness adjusted to the learning design so that the interaction between the instructor and participants can maintain each other (Cavus N. & Alhih 2014). Table 1 shows that the students have yet to use different features

maximally to support the implementation of online EDP. The data is established by using WhatsApp groups and Zoom Meetings for discussions. Researchers try to analyze why the other features have yet to be fully utilized maximally to support the implementation of the EDP syntax. The results of open interviews with lecturers

This study shows that all parts of the LMS must have instructions set by the lecturer. If the lecturer does not start the activity on the LMS, the student cannot begin the following action. It concludes that LMS activities still depend on the lecturers as account managers.

Discussion activities support this analysis. In the digital era, students now have digital multitasking capabilities (Mrazek et al. 2021), so Moodle-based LMS accessed via mobile phone makes learning more flexible. If the LMS and social media have not been synchronized in the access, students will not be focused on concept material, thus disrupting academic learning (Van der Schuur, W., Baumgartner, S., Sumter, S., & Valkenburg 2015). Learning with project approaches online must pay attention to the technology infrastructure in the LMS, standardized tests, and where the students respond to the learning process so that the learning process can continue to be sustainable (Kim 2021). The following parameter is the supporting instructor at the biophysics course carried out by the lecturer by making course descriptions, profiles of the teachers' team, and the development of meetings 1 to 15 following the RPS of the subject arranged.

Lecturers also provide descriptions, analysis questions, video links, or teaching materials needed as material in learning with EDP. The student response results from student work under the assignments at each meeting held are adapted to EDP syntax. The goal is that students can apply creative thinking skills to complete their project tasks using understanding and knowledge of material concepts in the course class on the LMS page (Kim 2021). The evaluation of this Moodle-based LMS is equipped with a graded score and feedback from each activity's impact carried out. LMS, case studies, and learning prototypes were used in the assessment projects, and teachers could publish grades and comments on grading pages. (Govindasamy 2002).

### 3.4 *Conduct further research*

The results of the research that has been carried out show that the application of learning with the full online EDP approach can be implemented. However, the results obtained to train skills for students still need improvement, so it is necessary to carry out further research and the application of learning with the EDP approach.

## 4 CONCLUSION

The research that has been carried out can be concluded that implementing learning biophysics courses can be done online with the help of a Moodle-based LMS. The EDP syntax facilitated every meeting and helped lecturers in monitoring student progress and responses in doing assignments. The implementation of online biophysics learning is helpful to students to still carry out activities in analyzing problems and making the solution project during the pandemic.

## ACKNOWLEDGMENTS

The data used in this study were obtained when implementing online learning with the help of LMS. The data were taken during Covid-19 pandemic. This article results from a preliminary study to conduct further research on the EDP approach to science learning.

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## Digital video project: Promoting students' autonomy in academic speaking for EFL students

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**ABSTRACT:** This study examined how digital video projects fostered learner autonomy in synchronous and asynchronous learning. The participants were fifteen English Education students who joined the Academic Speaking course in one of the public universities in East Java Province, Indonesia. Data were collected using a questionnaire, interview technique, and journal log. The data were analyzed using descriptive statistics. The results showed that digital video projects in synchronous and asynchronous learning could foster students' autonomy in the above-average category ( $N = 15$ ,  $M = 3.92$ ) and elevate students' motivation ( $N = 15$ ,  $M = 3.60$ ). Thus, teachers should provide many activities to promote their autonomy regularly. Further researchers might continue investigating learner autonomy with larger samples or more instruments to gather more comprehensive data.

### 1 INTRODUCTION

Recently, technology has played a significant role in promoting students' autonomy as learners, particularly in synchronous and asynchronous online learning. It is also relevant to implement in the Academic Speaking course as its objective is to enable the students to deliver well-structured ideas and make use of presentations in academic and professional forums where English becomes a communication medium, such as in conferences, seminars, and poster presentations. However, in the Indonesian context, students do not have the concept of learner autonomy. Students' learning activities tend to be teacher-centered, which means a teacher still plays a dominant role in the learning process. They do not give opportunities for the students to develop their learning abilities. The teacher is the only person who imparts knowledge or information to the learner. The learner is the receiver of the knowledge. As a result, the students do not have many chances to participate actively in the learning process and be responsible for their learning. Finally, learners turn out to be passive. They do not have any engagement or motivation to study or learn English outside the classroom activities, such as joining English courses or learning through BBC or VOA. Another issue seen as complex for Indonesian students is their proficiency in speaking English. One of these challenges is student anxiety which is considered by many to be one of their greatest fears. Fear brings a lack of confidence and makes students reluctant to express their thoughts while communicating in English. Most of them were afraid to deliver their ideas through synchronous mode, that is, a Zoom meeting presentation. They lack self-confidence in practicing pronunciation and developing ideas. Referring to the issue above, the teacher has to find an innovative teaching technique that gives the learners more opportunities to be independent in learning. Digital video projects can be applied to make the students take responsibility in online learning for the Academic Speaking course.

Lately, digital video is still relevant since it is accessible, affordable, and easy to use. Previous studies have found that digital video production could improve students' language learning by relaxing the learning situation.

The current study tried to close this gap by examining how digital video projects encourage learner autonomy for EFL students who are enrolled in online learning. Since it gives students the freedom to manage their own learning, it also encourages them to collaborate in order to produce an innovative video that challenges them and increases their motivation to learn the language. There were two rationales for conducting this study. First, there still needs to be more research that is conducting digital video projects to promote students' autonomy since most Indonesian students still need to have the concept of learner autonomy. Next, the teaching and learning process focused on a teacher-centered learning mode in a classroom that made students passive and less independent in discovering knowledge. Therefore, this study aimed to describe how digital video projects foster learner autonomy in synchronous and asynchronous learning and how digital video projects develop the students' motivation in synchronous and asynchronous learning.

### 1.1 *Learner autonomy*

The concept of learner autonomy has been considered important within the changing landscape of English in the 21st century. The advocates of learner autonomy believe that the concepts come in many guises in the classroom and link with the theories and pedagogies of lifelong, experiential, and technology-enhanced learning. Learner autonomy is often understood as the students' responsibility for their learning process. The conceptual parameters of the term are defined by a capacity for interdependent elements, including learning management, cognitive method, and learning material. Furthermore, learner autonomy can be developed by applying first-level management of learning preparation, organization, and evaluation. Afterward, it should be followed by leading learners' attention to linguistic feedback, reflecting on their learning, and building metacognitive knowledge.

Finally, it ought to be emphasized by providing an opportunity to determine students' learning goals. However, it must be pointed out that independent learning does not necessarily imply learning on one's own. Interaction, negotiation, collaboration, etc., are essential factors in promoting learner autonomy because learner autonomy is the product of interdependence rather than independence. Moreover, Dornyei (2001: 6) identifies motivation as the general principle that leads to independent action. Similarly, motivation and autonomy are seen as interwoven, playing a significant role. The use of rewards and punishments can also stimulate the learning process, but at the same time, they can increase the dependence of the learners. Therefore, a core educational goal is to support students to become autonomous learners who actively use technologies to construct personalized learning spaces and experiences. Using such technology for learning is a prerequisite for developing learner autonomy since it often requires a degree of autonomy and understanding of technology's impact. The teacher, then, must facilitate students to be more autonomous learners by providing technology to help them construct their knowledge.

### 1.2 *Synchronous and asynchronous learning*

In recent years, the launch of Language Learning & Technology (LLT) and computer-assisted language learning (CALL) has received a great deal of attention (Bhattacharya & Chauhan 2010; Reinders & White 2016; Smith & Craig 2013). Technology offers synchronous and asynchronous learning processes. Synchronous learning is supported by direct interaction between students and teachers using online learning platforms such as Zoom,

Google Meet, or Conferences. Meanwhile, asynchronous learning is a form of the indirect learning process (not simultaneously), such as using Google Classroom, one example of an asynchronous learning platform provided by Google Apps For Education (GAFE), which lets learners learn by considering their own time and space. It also allows teachers or instructors to create cyberspace classrooms where learning materials or tasks, assignments, and assessments can be carried out. Activating Google Classroom can increase EFL students' autonomy and language skills as they are exposed to the language outside the classroom and become proactive, creative, and independent in learning; (Lai et al. 2016; Sujannah et al. 2020; Tran & Duong 2020). It is important to note that mediating technologies can make the teaching and learning process more meaningful and encourage learner autonomy. Many studies show that the use of technology for learning often requires a degree of autonomy and understanding of technology's impact because students must take charge of their online learning and be able to control how they conduct their learning process. For example, blogging could promote students' learner autonomy in Indian universities because students must create a more attractive blog to attract readers to visit, read, and write comments. Moreover, the use of CALL in a classroom and a self-access center for Japanese university students could signify learners' planning, organizing, tracking, and evaluation; as a result, their autonomous learning improved. Next, learning journals' socially mediated technology could support the students' level of autonomy (Humphreys & Wyatt 2014). It is also said that independent learning journals socially mediated could support learner autonomy at the Vietnamese university level. According to Lai, Yeung, and Hu (2016), the use of technological resources outside of the classroom could promote learner autonomy. For example, social media sites like Facebook, Twitter, Google, YouTube, and Google Classroom can help students connect with others and develop initiative and independence in their studies.

### 1.3 *Digital video project*

Digital video combines several multimedia sources, including audio, video, and graphics. It is an excellent illustration for students to discover the significance of experiential learning while fostering their communication abilities (Huang 2015). With video digital projects, instructors may provide movement in the classroom that will help students learn languages, feel less anxious, and be more enthusiastic about their studies. According to a different study, digital video storytelling in Iran might boost pre-intermediate learners' speaking skills and motivation. It is believed that the students did several steps before they created the video, such as conducting research, organizing, drafting, and presenting. According to Yang et al. (2020) and Ngurah & Wijaya (2021), there are some steps to creating a digital video project. The first step is to create the scenario. The students compose the concept or scenario at this point. After that, the students record the video using a camera or a camera on a mobile device. The author can then utilize any accessible editing program, such as Movie-Maker, Filmora, and other tools, during the video editing step. The final step is the distribution and storage of the video on social media sites such as YouTube, Instagram, and Facebook after editing, etc. It shows that digital video could make students active learners who can interact and shape the story. Finally, it can also encourage teachers to utilize many more approaches and tools to help students to construct their own knowledge and idea to present and share them more effectively.

As a whole, video creation has the potential to be a very effective teaching tool for students. It will raise students' willingness to learn and allow them to explore their knowledge while enhancing their language abilities and teamwork skills. However, only some studies have investigated how digital video projects promote students' learner autonomy in online learning: Synchronous and asynchronous learning. This is important to know to conduct this study based on the following research questions: (1) How can digital video projects foster learner autonomy in synchronous and asynchronous learning?

## 2 METHODS

This study took place at the English Education Department in one of the public universities in Surabaya that conducted an online learning process using Google Classroom (GC) and Zoom meetings. The participants were 15 students who joined the Academic Speaking course, consisting of 11 female and 4 male students, and their ages were about 19 years old.

The instruments used in the present study were interviews, journal logs, and questionnaires using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire was adapted from Benson (2013) and consisted of 17 statements categorized into three points: Students' planning, students' effort to do the plan, and students' self-activity. The interview was used to collect additional information that could not be obtained from the questionnaire.

The data was collected by distributing an online questionnaire and interviewing students during synchronous and asynchronous classrooms.

The data were analyzed by using descriptive statistics based on (1) students' planning, (2) students' effort to do the plan, and (3) students' self-activity. There were three classifications of the average score, namely low ( $x \leq 2.49$ ), medium ( $2.5 \leq 3.49$ ), and high ( $3.5 \leq x \leq 5.0$ ).

Furthermore, the descriptive statistics of the results of learner autonomy were presented. The qualitative data were recorded, transcribed, and labeled with codes. For the sake of clarity and accurate reporting, all interviewees were given unique codes. For example, S1 was for student 1.

## 3 RESULTS AND DISCUSSION

To analyze whether digital video project could foster learner autonomy in synchronous and asynchronous learning, especially in Google Classroom and Zoom meetings, it could be seen from three different aspects, namely (1) students' planning, (2) students' effort to do the plan, and (3) students' self-activity. In connection with the first aspect, Table 1 shows students' preparation for learning Academic speaking.

Table 1. Participants planning to learn academic speaking.

No	Statement	Mean
1	I choose online articles which are related to my personal experience/interest	3.73
2	I read the article before I write my summary to be presented	4.60
3	I take a note to help me to understand the article	3.93
4	I manage my time well to write summary based on my chosen article to finish my video on time during in online learning	3.67
	Total	3.98

In accordance with the finding, students must read an article before writing a summary and presenting it ( $N = 15$ ,  $M = 4.60$ ). Then, the students must find their article on the internet ( $N = 15$ ,  $M = 3.73$ ). Moreover, in relation to the result of the interview and journal log, one of the interviewees, for example, explained the following during the final interview;

*“Before I present my article, I must decide the topic of the article that I like to be presented. Then, I find that article from google scholar by typing the keywords. In this case, I have found the article from IJELT (International Journal of English Language Teaching). Next, I read that article.*

After that, they must note to help them understand the article ( $N = 15$ ,  $M = 3.93$ ). In this activity, students could implement many kinds of strategies to learn quickly and be more self-efficient. One of the participants reported below:

*“There are some strategies that I can implement to understand the meaning of the text: scanning, paraphrasing, summarizing, and taking notes. First, I will use scanning to understand the text’s main point. After that, I summarize the text using paraphrasing technique. It is used to help me change complex sentences to simple ones to understand the text’s meaning. If I can construct a simple sentence, it will be easiest for me to present the article’s content. Moreover, my friends can also follow my explanation. All these activities I have done in the preparation step so that I can memorize the point. Moreover, I will enjoy the process of creating video.”*

Because the time was limited and the teaching and learning process was conducted online, students must manage their time well to complete their project ( $N = 15$ ,  $M = 3.67$ ). One of the interviewees stated:

*“Because I have many assignments from my courses, I mean, it is not only from Academic Speaking. I must manage our time well. Moreover, I also schedule one day for writing summary, one day for writing PPT, and one day for creating or recording a video.”*

After the participants had done their planning, the next stage was implementing or executing their plan.

Table 2. The students’ effort to do their plan.

No.	Statement	Mean
5	I use PPT, video recording, or filmora software, to complete the video project	4.33
6	I evaluate my PPT and video before I upload in google classroom	3.73
7	I am actively involved in activities such as discussion and presentation class (zoom meeting)	3.13
8	I ask questions to friends or teachers when I don’t understand the materials in online learning	4.07
9	I can help my friends who have difficulties in understanding the text or their task in online learning	4.33
	Total	3.92

Table 2 conveys that students used PPT, video recording, or Filmora software to complete the video project ( $M = 4.33$ ). Before they submitted their project, they evaluated the video ( $M = 3.73$ ). One of the participants stated:

*“Before I submit it, I will check my pronunciation, voice, and video quality. If I am not satisfied, I will retake the recording. It was about 4–5 times. I also checked my PPT before I continued to the next slide. Besides, I also asked my friend to check my video and PPT.”*

During online learning (asynchronous learning), the participants also asked their friends to help them once they had difficulty preparing their project ( $M = 4.07$ ).

*“When I got a difficulty, I discuss with my friends how to solve that problem.”*

Furthermore, they would help their friends if they got difficulty understanding or completing the project ( $M = 4.33$ ).

*“On the other hand, I can also help my friends who get difficulty finding research questions. I can also help one of my friends when they cannot record the video.”*

Some participants were actively involved in discussions and presentations related to the implementation of synchronous learning (Zoom session) ( $M = 3.13$ ).

*“During the presentation class, I am always active to be involved in the discussion by asking a question.”*

However, a few students needed to be more active in the discussion. They conveyed several reasons why they did not actively participate in the teaching and learning process.



*“I need more quota data to download the video or to read the materials in GC. I prefer to listen and watch the video played by the moderator.”*

After the students presented their video in synchronous learning, they must assess their performance along with their friends’ performance. Table 3 depicts the students’ activities.

Table 3. Students’ self-activity

No.	Statements	Mean
10	I reflect the improvement of my speaking ability in order to study effectively in online learning	3.33
11	I always assess my own learning in academic speaking in online learning	4.40
12	I assess my classmates’ learning and presentation in academic	3.93
	Total	3.88

Based on the data above, the students reflected on their speaking skills ( $M = 3.33$ ) and conducted self-assessment after presenting their video in the Zoom session ( $M = 4.40$ ). One of the participants stated:

*“By doing a self-assessment, I can reflect on my presentation appearance. For example, I correct pronunciation points. If I have a problem in pronouncing a word correctly, I need to practice more to improve my speaking skills.”*

In addition, the students also needed to conduct peer assessment in Zoom sessions ( $M = 3.93$ ).

*“In my opinion, peer assessment is very important because we can know our performance according to my friends.”*

The research question focused on the students’ use of synchronous and asynchronous learning to develop their own learning strategies for academic speaking in the English Education Department. As the data presented, students had an above-average score on their autonomy ( $N = 15$ ,  $M = 3.92$ ), indicated by their planning, plan execution, and self-activity. Surprisingly, the particular group of students from traditional backgrounds demonstrated positive attitudes toward the autonomous approach [20]. The questionnaire and interview showed that learners had developed learning strategies to foster independent learning. Video digital project is a helpful technological resource in online learning that can help become more independent in their learning process. Additionally, it encourages students to participate more actively in class and successfully employ learning techniques. According to the current study, selecting an article’s topic, conducting research on it, and writing its summary all occur within a planning stage. The production of the supporting materials and the creation of high-quality digital videos took up time and effort for the students during the planning activities. This study is similar to González (2009) as before students submitted their videos, they also evaluated their work to ensure that they had done this project well. It was known that the students became aware of their strengths and weaknesses in the Academic Speaking course. Finally, they are aware of a life-long learning process.

Meanwhile, cognitive strategies were mainly applied in executing the planning required to convince the audience. In this step, peer feedback was implemented to encourage students to express their opinion. The purpose of peer feedback is to train students’ critical thinking by providing constructive suggestions and emotional support. Students should be conscious of their body language and politeness traits, such as tone and mood, when giving comments or opinions. Students should accept their peers’ criticism while receiving feedback and being open-minded. Finally, students are responsible for learning the language inside and outside the classroom.

The implication is that metacognitive and cognitive strategies should be developed for a good video presentation. Additionally, students’ time, effort, and practice in creating their

video presentations undoubtedly encourage them to engage in autonomous learning behaviors that lead to a higher level of learner autonomy. The conclusion is that self-reflection guidelines should be offered in relation to self- and peer-assessment so that students can reflect on their presentation from start to finish. They eventually started to reflect on themselves more critically. The proper way to provide and receive feedback was also taught to the students. Therefore, providing constructive feedback encourages students to make their perspectives more meaningful.

The implication is that teachers play an essential role in creating a stress-free learning environment in the classroom. Instead of focusing on grades, the teacher needs to get the students' attention on their progress on each video. The students will value their learning accomplishments more than their grades if they are aware of the progress have made due to their efforts. The instructor should also foster a supportive and amicable environment among the students in the classroom.

#### 4 CONCLUSION

The study's result indicates that digital video projects are implemented to promote learner autonomy in Academic Speaking during online learning. Since the current study focused on the use of video in online learning scope, there are several recommendations to foster learner autonomy. EFL teachers should try diverse approaches to regularly ensure that students are interested in or required to promote learner autonomy. In addition, educational researchers can continue investigating learner autonomy in EFL classrooms based on larger samples to ensure more reliable findings or more instruments to gather more comprehensive data.

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*Educational trends and issues*



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## A study on children’s understandings of values through reflective practices using a Values-Based Reflection Framework (VBRF)

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**ABSTRACT:** The purpose of the study is two-fold. Firstly, to understand conceptions and manifestations of values practices in children. Secondly, to employ a Value-Based Reflective Framework (VBRF) designed to impart values in children through reflective thinking, dialoguing, and writing to enhance value development. VBRF encapsulates 14 values and acts as a teacher’s guide to conduct reflective classroom sessions. Fifty-nine primary school children between the ages of eight and eleven studying at an international school participated in this study. 14 reflection sessions in four months of duration were carried out with the support of the researchers and the homeroom teachers. After each reflection session, children responded to open-ended questions that elicited their understanding of values and practices. The narrative descriptions collected were analyzed using a content analysis approach to report the findings. The findings revealed that most of the children have a well-developed conception of values, and they reported that the VBRF framework helps them learn new values, an easy and exciting approach for mindful practice of values, and the sense of enjoyment they derived in dialoguing, communicating, and writing during reflection sessions. Altogether, the study is unique. It has implemented a novel and practical approach to reflective practices in building values in children, calling for teachers, parents, and educators to utilize reflective practices for value development in children.

### 1 INTRODUCTION

A society’s value system could be referred to as its character (Sahin 2019). Furthermore, value dispositions are fundamental for developing self-identity and self-concept (Hitlin 2003), influencing how one interacts with others (Döring et al. 2016). Pomeranz et al. (2011) defined values as an individual’s ethics or “concepts or ideas of what individuals find important in life, what they consider ought to be good, bad, right, and wrong”. It is universally acknowledged that curricula need to be underpinned by explicit and implicit values (OECD 2020). In addition, the OECD (2020) learning compass for 2030 acknowledges the need to strengthen value building in young children by incorporating a value system into the school curriculum using a variety of approaches, especially in the four thrust areas: personal, social, and societal and human values. However, there has been a growing concern about the erosion of human values among the younger generation, which demands more substantial efforts to develop shared values of citizenship at the school level to build more inclusive, fair, and sustainable societies. Balakrishnan (2010) suggested that children must be prepared with the creativity and skills required to confront and resolve moral challenges. At this point, formal education must incorporate value development in children through implicit and explicit curricular activities.

Generally, the value curriculum in schools is called moral, civic, or citizenship education. The preceding years laid the foundations for forming values, socio-cultural beliefs and norms, life skills, and attitudes. Although there are numerous pedagogical approaches for instilling moral values in young children, achieving significant and long-term behavioral change in upholding moral values and virtues remains difficult. Dewey's theory from 1933 is that reflective practice is an important part of learning because not all learning experiences are interesting until they are thought about. From a developmental psychology perspective, research indicates that by late childhood (ages 7–12), children can learn from experience through self-reflection as a self-conscious action (Zelazo 2000).

The central premise of this study is that children learn values through self-reflection and expression in a teacher-mediated scaffolded sharing session. The current research is grounded on two assumptions. Firstly, children learn values not by mere exposure to understanding values but through conscious efforts to think, reflect, observe others, and practice values in a socially mediated system. Secondly, we postulated that children expand their understanding of values and generate new insights through dialoguing in a collaborative peer-group setting during the reflection sessions. Therefore, we seek to investigate values development in children by implementing teacher-led reflection sessions coupled with articulation and sharing in a collaborative peer-group setting. In this study, reflection refers to a conscious and deliberate effort to recollect and reflect on the value dispositions and practices to enhance value practices. The term reflective practice refers to the ability to reflect on one's activities to engage in the process of continuous learning. It entails assessing behaviours and practising reflectively and reflexively. It includes children's descriptions of their knowledge of values, self-perception, beliefs, and practices that stimulate reflections and thinking by one or more children in the group, subsequently encouraging them to engage in meaningful dialoguing and intriguing them to evoke responses.

### 1.1 *Research conceptual framework: The Values-Based Reflection Framework (VBRF)*

Earlier studies on value development frameworks for young children have revealed salient features in understanding the development of values in individuals, primarily based on the conception and motives underlying each value. Schwartz (1992) defined a circular motivational continuum, dividing values into ten universal and four higher-order values. In his values framework, neighbouring values (such as universalism and compassion) have compatible motivations, but negative values (such as power and universalism) have conflicting motivations (Schwartz 1992). Cheng and Fleishmann (2011) proposed sixteen human value concepts: liberty, helpfulness, achievement, honesty, self-respect, intelligence, open-mindedness, creativity, equality, responsibility, social order, wealth, competence, justice, security, and spirituality.

The current study considers fourteen values ascribed as the fundamental values in Malaysia's Moral Education introduced in 2011 (Vishalache 2010). The fourteen values are generosity, collaboration, bravery, fairness, gratitude, diligence, honesty and integrity, moderation, respect, responsibility, tolerance, humility, and love and affection. The VBRF is depicted in Figure 1. The VBRF consists of two levels, with the inner layer representing the reflection framework that aids the teacher in facilitating reflections and discussion in the classroom. The peripheral layer illustrates the fourteen core values that must be reinforced through reflective activities. To guide this research, a Value-Based Reflection Framework (VBRF) that is primarily based on reflection-in-action and reflection-on-action has been developed (Schon 1983).

The primary objective of the VBRF is to cultivate systematic meta-awareness and to provide children with the opportunity to reflect on and clarify explicitly the values underlying their attitudes and behavior and assess their effectiveness. The current research aims to answer the following research questions: 1. What are the shared values children reflect upon during



Figure 1. Values-Based Reflection Framework.

the reflection practice sessions? 2. What are children’s understandings of some common values? and 3. What are children’s views about using reflective practice to understand values?

## 2 METHOD

The study adopted a content analysis to answer the posed research questions. Content analysis is also a practical approach to studying human values (Cheng & Fleischmann 2010). It offers an unobtrusive analysis of recorded communication, such as dialogues and textual data, to detect an individual’s values that are expressed consciously or unconsciously that may not be captured adequately in a survey method (Fleischmann et al. 2009). Fifty-nine children between the ages of eight and eleven from four sections of grade 4 in an international school in Selangor, Malaysia, participated in the study. The children took part in the study with parental consent. This study was carried out over 14 weeks of reflection sessions, and the data were collected after each session. The data collection process involves two stages.

In stage 1, children participated in 14 week-long values reflection sessions. During this session, the Pictorial Values Instrument (PVI) conducted reflections and knowledge sharing of values. Subsequently, children engaged in reflective writing, which is the second stage. The responses gathered over 14 weeks of reflection sessions were used for content analysis and presentation of the findings.

### 2.1 Instruments and data collection

#### Stage 1: Implementation of weekly reflection sessions using PVI

The instruments used in this study consist of two parts. Part 1 of the instrument is the PVI, an adapted version of the Animated Values Instrument from Collins et al. (2016) and the Picture-Based Value Survey for Children (Döring et al. 2010). PVI consists of 56 pictorial items that demonstrate a scenario for each value. Four pictorial items represent each value. Therefore, 56 pictorial items were developed for the PVI instrument. A short narrative is provided for each pictorial item to prevent response bias in recognizing the underlying value depicted in each picture. The PVI was given to five experts to establish content validity. They validated the instrument based on the value depicted in each illustration, the clarity of the text in the narration, the suitability of the scenario for its age-appropriateness, and the visuals’ clarity and aesthetics. Thereafter, data collection was organized. During the 14 weeks of reflection sessions, each value was presented four times using four distinct scenarios from the PVI. The data collection was between July to October 2021. Due to the Covid-19 pandemic, virtual reflection sessions were conducted via Zoom, each lasting for 30 minutes for stage 1. All the sessions were recorded. A sample of the items from PVI is appended. The researcher in charge of a particular class and the homeroom teacher conducted the virtual



reflection sessions by discussing the four values assigned for the week. Each session began with greetings followed by a discussion of the four values using real-life examples and experiences, allowing children to share and reflect on their value practices. This is followed by wrapping up the discussion and a statement of appreciation. Finally, the children were prepared for the stage 2 session on reflective writing.

### Stage 2: Reflective writing session

During the reflective writing session, the children were given 10 to 15 minutes to reflect on their understanding and values practices in response to the four open-ended questions, which is the core feature of the VBRF: 1. What value (s) do you want to write about today? 2. What are your thoughts about this value(s)? 3. What do(es) the value(s) mean to you? and 4. How will you show your values to your family, friends, and others? Following this, the children were encouraged to choose at least one or more values of the day and respond to the questions in the google form. The children were encouraged to seek clarification through chat or audio throughout the virtual session. Additionally, they were encouraged to keep their video and audio open. This allows the researcher to gather insights into children’s understanding of values.

## 3 FINDINGS AND DISCUSSION

In total, there was a total of 399 responses received from 59 students for the 14 values over the 14 weeks of the reflection sessions. To understand the common values children prefer to contemplate, the frequency of responses for each value was counted, and the results are presented in Table 1. In addition, an open-source word cloud generator was employed to analyse the children’s responses and the word cloud generated for a total of 399 responses is shown in Figure 1. The results indicated that the most preferred value chosen for reflection is the responsibility, while other highly selected values were kindness, hardworking, fairness and respect. Values such as courage, honesty and integrity, cooperation, moderation, benevolence, tolerance and gratitude received preferences that ranged from moderate to low for the reflection exercise, while humility was identified as the least chosen value to be reflected upon.

Table 1. Children’s values choices for reflection (n = 59).

Values	No. of children responded	Total no. of responses over 14 weeks	Values	No. of children responded	Total no. of responses ver 14 weeks
Responsible	42	59	Honesty and Integrity	21	26
Kindness	38	49	Moderation	23	26
Hard work	31	37	Benevolence	23	25
Respect	28	37	Tolerance	12	16
Courageous	23	35	Love and affection	9	11
Fairness	29	35	Gratitude	11	11
Cooperation	22	30	Humility	3	3

### 3.1 What are shared values that children reflect upon?

To understand how each child has made use of the opportunity to reflect upon a total of 14 values shared throughout the intervention, the number of value descriptions received from



Figure 2. Values reflected during the reflection sessions.

each child was tallied. The results revealed that only one child could reflect on 11 to 14 values throughout the intervention, whereas 23 (37.70%) children reflected on values ranging from 7 to 10. In addition, 23 (37.3%) of the children reflected on 4–6 values. Other than this, 14 (22.96%) children considered only three or fewer values to reflect on during this exercise. This revealed that most children better understood most of the values discussed during the reflection sessions.

### 3.2 *What is children’s understanding of some common values?*

The descriptions received after each reflection session were analyzed, and the children’s conception and the manifestation of values in their daily routines are discussed below.

**Honesty:** The more general views of children on honesty and integrity are to be truthful with all, not to lie, admit mistakes, and not to blame others for one’s mistake. Other than this, a few children have articulated a well-developed understanding that these values help to foster trust in others, be bold and brave, and avoid problems. Contrastingly, a few children in the current study believed that being honest is contextual, that being honest is not required in all instances, and that it is acceptable to lie when needed. The combined views of children could be understood from the perspectives that along the continuum of deontological and utilitarian perspectives, philosophers have debated for a long time the notions that honesty leads to trust while lying leads to mistrust and that honesty is always exemplary and lying is always immoral. According to Xu et al. (2013), all age groups of children described the helpful truth-teller as kind and honest and the harmful liar as evil and dishonest. Further, he found that honesty was significantly related to children’s trust ratings mediated by kindness. In addition, as children age, they tend to prioritize benevolence over honesty (Xu et al. 2013).

**Cooperation:** About 22 children shared their understanding of cooperation. The children have grasped the meaning of cooperation as working together and helping one another, teamwork despite differences, working together on projects, playing as a team, sharing thoughts and ideas for collaborative class assignments and discussions, supporting family members who are struggling with something, agreeing with and helping friends in activities. They also believed that cooperation is a means of gaining trust and respect and facilitating work completion. The children’s understanding of cooperation is consistent with Slocombe and Seed (2019), which emphasized the nature of cooperation as a component of human nature that demonstrates mutual connections and interdependence. In their primer, they outlined how children acquire the abilities and motivations to cooperate broadly, including working together toward shared objectives and helping others reach their goals while sharing resources and knowledge.

**Moderation:** The responses for moderation revealed that children understood moderation to be not being greedy and providing opportunities for others to enjoy, neither excessive nor inadequate, mindfulness in not wasting food and money, and self-regulation to reduce screen time, such as limiting television viewing and online gaming. Notably, a few children have a more developed understanding that a moderate person has greater self-control and self-restraint and practice self-instructions to keep oneself in control. Two children better understand how moderation helps in relationships, mentioning that if there is no

moderation, there will be conflicts, and being moderate allows family members to prevent arguments.

**Courage:** 23 descriptions emphasized the importance of courage. The children's conceptions of courage were standing up for someone, doing the right thing always, overcoming fear, problems, and difficulties, playing in tournaments, being brave, admitting fault, being truthful always, and doing things that are scary to do. These meaningful descriptions of courage are similar to other findings in the literature. E.g. Muris (2009) identified that most children in the age group of 8- to 13-year-olds have a better understanding of courage, and they stated that courage is daring to do something scary. Along similar lines, Szagun and Schauble (1997) found that most of the six-year-olds conception of courage was centred on overcoming fear and taking risks related to the inner state of behavior.

**Fairness:** About 29 children shared their views on practising fairness. Most believe fairness is treating everyone equally, sharing equally amongst the group members, a fair trade, and being respectful, honest, kind, and caring to others. Further, many children mentioned that fairness is being considerate with friends, for example, taking turns while playing. Interestingly, a few children emphasized that fairness is the best of all values and should be the most practised value to make everyone happy; it also means a lot to the world that everything will change for good. Several children's views of cooperation revealed the overarching nature of value formation in children, such that fairness comprises trust, honesty and integrity, cooperation, and acts of kindness. Fairness must be instilled at a younger age because, as children mature, they become more concerned with seeming fair to others, which may account for their strong tendency to behave reasonably (Blake et al. 2015).

**Gratitude:** About 11 children presented their understanding of gratitude. According to them, gratitude is a significant value to practice. Showing gratitude is being appreciative and thanking the person for their kindness and helpfulness. They regarded that being grateful to a person means returning, and it is the least yet most vital that one can do for the benefit of another. The sense of gratitude as conceived by children demonstrated the three forms of thankfulness, i.e., verbal forms, which is saying 'thank you, tangible forms, i.e., sharing gifts, and connected forms, which are sharing gifts and building relationships (Baumgarten-Tramer 1938). 7-year-olds proposed fewer physical gift exchanges and more connected kinds of thankfulness (Freitas et al. 2011; Halberstadt et al. 2016).

**Hardwork:** Most children regard hard work as obtaining good grades in exams and making attempts to improve oneself and one performance. Besides, the other characteristics of a hardworking person were evident, including self-challenge, going the extra mile without being instructed, persistence and putting in a lot of effort (Firmanti et al. 2020), consistent in practice, an attitude of never-give-up, and the belief that hard work ensures a promising future. The children in this study demonstrate a deep understanding similar to Wadu et al. (2021). Children participating in the non-formal means of value development demonstrated hard work through active participation and responsibility.

**Humility:** It is worth noting that only three children shared their reflections on humility, and their narratives were brief and limited, indicating that humility is being modest and not feeling jealous, and it is a practical value to practice. The characteristics of humility investigated by Nicholas and Finkbiner (2013) involve two dimensions: a humble appraisal of one's accomplishments and an openness to tolerance or new ideas. Their results showed preschoolers were more receptive to new ideas, although the modesty standard still needed to be completely established. Further, they claimed that moral humility is a relatively new area of moral psychology and calls for further research for a better foundation and understanding.

**Respect:** A majority of the children expressed similar views on the value of respect. They viewed respect as listening to parents' instructions and respecting elders, a form of love and kindness, and not being rude to others and showing respect to elders. Some of the notable understandings were that elders are experienced. Therefore it is crucial to heed and follow their advice, respect should be practised everywhere, and all should be respected.

Respect even if people are mean in their behaviour; respect means giving space and time to others and not intruding when someone is busy.

Kindness, benevolence, and love and affections: The findings revealed an overarching comprehension of children's knowledge of the values of kindness (38 responses), benevolence (23 responses), and love and affections (9 responses). The majority of children regarded kindness as an essential value. The responses indicated a sophisticated and multi-faceted understanding of the value, encompassing the significance of being kind to family and friends, the needy, the earth, and the environment. They emphasized that demonstrating kindness is a fundamental human value that could change the world into a better place. Other attributes of kindness indicated in the responses were sharing, helping, generosity, caring, cooperation, showing respect to others, being approachable, and making your loved ones happy and comfortable. Children have also grasped the reciprocity nature of kindness, that it brings smiles and happiness to both the giver and receiver of kindness. An intriguing response from a child is that it is the most commonly practised value among people, yet people are unaware of it. They have also acknowledged that being kind to the earth and environment means keeping the environment clean and safe.

Responsibility: The children demonstrated a comprehensive knowledge of the importance of responsibility through several instances. Views include doing what one intends to do without reminders, accepting responsibility for oneself, offering help to parents in household chores, being responsible for one's behavior and outcomes, using things mindfully to avoid waste, caring for others, and correcting one's mistakes. Interestingly, many highlighted that maintaining a clean and orderly workspace, classroom, and home and putting things back after use is responsible behavior. A few students striking responses were that caring for siblings and keeping the earth clean are essential acts of responsibility, and importantly, they recognized that a responsible person would readily gain the trust of others. Analysis of children's discussion revealed that the nature of responsibility in the home did not only constitute doing tasks such as cleaning, making lunches, and looking after siblings but included notions of choice, autonomy, 'becoming', and 'developing'. Responsibility was also understood as relational.

Tolerance: Regarding tolerance, 12 children expressed the need to be empathetic and not harm themselves or others. Their sharing was to overcome hurtful individuals and their insulting comments without the intention to hurt the other person. This demonstrates moral conviction (Nicholas and Finkbiner (2013), which indicates that individuals should not defend or creates a sense of conflict with others having differing ideologies. The responses showed that children intend to avoid such people through tolerance by regulating their emotions and avoiding feeling angry. Most of the responses showed that, in such situations, children tend to control their temper and ignore harmful friends and people to avoid conflicts and arguments. A more mature response from a child is that tolerance is respecting people's choices. Specifically, one response was that confinement at home during the pandemic is an act of tolerance which was comparable to the statement highlighting that one cannot survive without tolerance. One child admitted honestly that he/she has no tolerance at all. Sakall et al. (2021) reported that primary students' perception of tolerance is to behave well, show respect, talk nice, and be calm and honest. A similar notion of understanding among students was reported by Aslan (2019) and Ersoy (2016) that helping, sharing, behaving well, and loving and respecting are forms of tolerance.

### *3.3 What are children's views about using reflective practice to understand values?*

When children were asked about their views on reflective practices, their responses revealed insightful findings about using the VBRF for value enhancement. The typical responses were their enjoyment during the session (e.g. fun, enjoyed fill-in the forms every week), practical and exciting way to learn new values, a better method to recall and remember values (easy to recall/ recap and refresh memory during this exercise), easy to follow through the exercise,

and the ability to consciously practice values by observing others and introspecting their own, and that it acts as means of self-improvement through developing their value disposition and practice. Indeed, responses indicated that children are interested in attending the sessions.

#### 4 CONCLUSION

The study aimed to understand conceptions and manifestations of values practices in children and to enhance children's values through reflective practices using the VBRF framework. To date, no study, to our knowledge, has employed a systematic approach to reflective practices in value enhancement in children, mainly using the VBRF framework. VBRF was specially devised for this study that integrates values scenarios, reflections, discussions, and reflective writing. VBRF encapsulates 14 values, and when used along with the values scenarios (PVI instrument), it acts as a teachers' guide to carry out reflective sessions in the classroom. The limitation of the study is that the reflection sessions were carried out virtually due to the pandemic. As a result, the children's descriptions of values practices were mainly confined to their immediate practice, within their family and home, rather than retrospective recollections of events associated with their demonstration of values in social interactions. The findings confirmed that reflection sessions leveraged children's thinking and reflections and offered them an effective way of gaining insights for learning new values, recalibrating their existing practice of values, and practising values mindfully. The descriptive findings of the study concluded that most children have a well-developed conception of values, and most of them were able to reflect upon 7 to 10 values out of 14. Further, the findings asserted that teacher-mediated reflections in social settings, e.g. classroom, trigger children's thinking process necessary for values development. Moreover, the study's findings inform teachers, parents, and educators about promoting reflective skills in children through critical appraisal of values embedded in daily events and real-life situations by dialoguing and writing. Further, the current study recommends incorporating VBRF into the value curriculum, as it integrates a socio-constructivist approach to value building. Hopefully, this research has taken the initiative to build a robust value system in children that directly and indirectly supports the development of a value-driven community.

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## APPENDIX

A sample from the PVI instrument was used for reflection.

Scenario 19: The picture shows a courageous student. He dares to stand firm and not be tempted to be part of inappropriate online schemes.



# Determinants of caregivers' burden of cancer patients: A systematic review

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**ABSTRACT:** Cancer disease is growing rapidly. Patients need intensive care during treatment which leads to the burden of care for the caregivers. Demographic characteristics are the rich factors of caregiver burden. Formal caregivers experience an average level of burden as compared to informal caregivers. This literature review aims to synthesize the determinants associated with caregiver burden in Asian countries, to examine how caregivers improve the patient's quality of life. A systematic review was conducted from Google Scholar, Psych info, PubMed, and Scopus. A total of 861 articles were screened, and 37 studies were analyzed. The study was completed through a descriptive research design. The predictors that are most important for predisposing to the burden of care are the gender of caregivers, affinity with patients, age of the caregivers, and unhealthy coping styles. The burden of care is a more challenging situation for female caregivers than for males. Affinity with patients is the most common determinant for enhancing the level of burden among caregivers. The age of the caregiver also led to a higher burden. Uneducated caregivers feel more burden of care compared to educated ones because education empowers the capability of coping with encountering a stressful situation. Gender, affinity with the patient, age, education level, and caregiving duration are important predictors. Furthermore, patients' cognitive capacity, dependency level, and behavioral problems cause a burden. Interventions are needed to relieve the burden of providing intensive care among caregivers to patients.

## 1 INTRODUCTION

World Health Organization WHO, having caused 8.8 million deaths in 2015, meaning that one in every six deaths is due to cancer (Mohanty & Mohanty 2019), named cancer as one of the major deaths causes worldwide in February 2017. Cancer is a disease in which an uncontrollable division of cells affects the normal body cells by taking up their nutrients and respective functions. Since 2005, cancer has caused most deaths in China (National Bureau of Statistics of China 2005). Almost 4 million Chinese were found to have invasive cancer in 2015, and nearly three million Chinese lost their lives due to cancer (Chen et al. 2016). The Healthcare system has constantly been trying to provide cancer patients with better treatment. Cancer continues to be a major disease globally. New cancer patients have risen from fourteen million in 2012 to more than eighteen million in 2018. Estimations show 2019 to bring more than a quarter or a million more cases in Spain alone, which may make it the second deadliest disease (26.7%) after cardiovascular ones (de Oncologia Medica 2016). Cancer is recognized globally as the most harmful and deadliest of diseases. 2018 showed more than 18 million cancer diagnoses according to the Global Burden of Cancer study by the International Agency for Research on Cancer of WHO. By 2025, the number is predicted to rise to 20 million, with the poorer nations being the most damaged (Ferlay et al. 2019). In Malaysia, the Malaysian National Cancer Registry reported more than one lac cases in four



years (2007–11). The state of Sarawak reported nearly ten thousand cases, making up nearly one-tenth of the state's population (Omar & Tamin 2011). It is a widely accepted fact that cancer causes much harm to its patients, both physically and emotionally (Stein et al. 2013).

Studies show that developing countries make up nearly two-thirds of global cancer patients (Vakili et al. 2014). Iran shows around seventy thousand cancer cases yearly, with more than thirty thousand cancer deaths (Afsharfard et al. 2014). The high probability of acquiring cancer in these nations provides the masses with numerous psychological issues, including insomnia, anxiety (especially regarding their survival), and many kinds and levels of depression. By 2030, annual cancer patients are predicted to surpass 22 million (Bray et al. 2012). Cancer can affect the patient and the patient's family (Kayser et al. 2007).

Within the past decade, caregiving has been a center of attention and importance. It is the need of the hour to provide care to cancer patients. The responsibilities and duties of a caregiver begin the moment cancer is diagnosed. The extent of responsibilities varies based on the type, stage, and necessary treatment of cancer. Literature has mentioned the caregivers' needs in detail. So, caregivers require emotional and psychological support (Ashrafian et al. 2018; Campbell et al. 2009; Doubova et al. 2015; Kim 2015; Longacre 2013).

Many studies have already investigated the damage caregiving does to the caregiver's health. Although different patients' diseases may affect the caregiver's burden, limiting the scope of the study to a few diseases helps identify the most common effects of caregiver burden. Knowing the prime effects of the caregiver's burden affects the level of planning possible in dealing with the burden. For now, the interventions support the caregivers physically, financially, and emotionally while providing them respite from their services and advising them on coping mechanisms. Nevertheless, reviewing such strategies prove them ineffectual in dealing with the burden. Thus, this study aims to determine the expected effects and factors of caregiver's burden in an Asian environment to assist policymakers in developing better measures to deal with the caregiver's burden. The literature review aims to answer the following research question: What determinants of caregiver burden among informal careers?

## 2 METHOD

A systematic review was conducted to complete this study. The researcher described the methodology in this section, comprising a database search strategy, inclusion criteria, and a selection process.

### 2.1 *Data search strategy*

Four databases were used for the literature search: Google Scholar, PsychoINFO, PubMed, and Scopus. It was decided to ensure that the terms cancer, caregiver, career, or caregiving, burden. To further filter the search results, the articles had to be written in English and published from 2004 onwards in 2021. The multiple database searches provided a total of 861 articles after removing duplicates.

#### 2.1.1 *Inclusion criteria*

The final selection of research articles was comprised of multiple inclusion criteria that were established to include studies as literature review. Caregiver burden was considered the critical concept in the present study by reviewing the demotions of caregiver burden and the study's theoretical framework. Furthermore, the ultimate purpose of the study was to consider the literature related to determinants of caregiver burden. All predictors and factors associated with the caregiving burden were focused on, including in the literature review, to

understand the background of caregivers' burden. Only research papers on the caregiving perspective and burden of care were studied and included in this systematic review.

### 2.1.2 Selection process

Preliminary 37 articles were selected, and abstracts of these articles were established for inclusion criteria after completing the screening process. Critical analysis was accomplished by reading the full texts of selected articles used in the inclusion criteria.

## 3 RESULTS

The 37 studies that were included had 14 cross-sectional and three longitudinal studies. Of these studies, 13 measured caregivers' burden through authentic research tools. Four of these studies used only one instrument, the Zarit Burden Interview (ZBI), which was also included in every paper researching caregiving burden. This section includes the results about stressors, various factors, moderators, and background characters. All the longitudinal studies found that the time required for caregiving was the most significant predictor of caregiver burden. Each of these studies showed that over time the caregiver burden increased irregularly while the perceived burden showed a sharp rate of increase with the progression of time. The time spent in caregiving has a more direct effect on the caregiver's burden regardless of

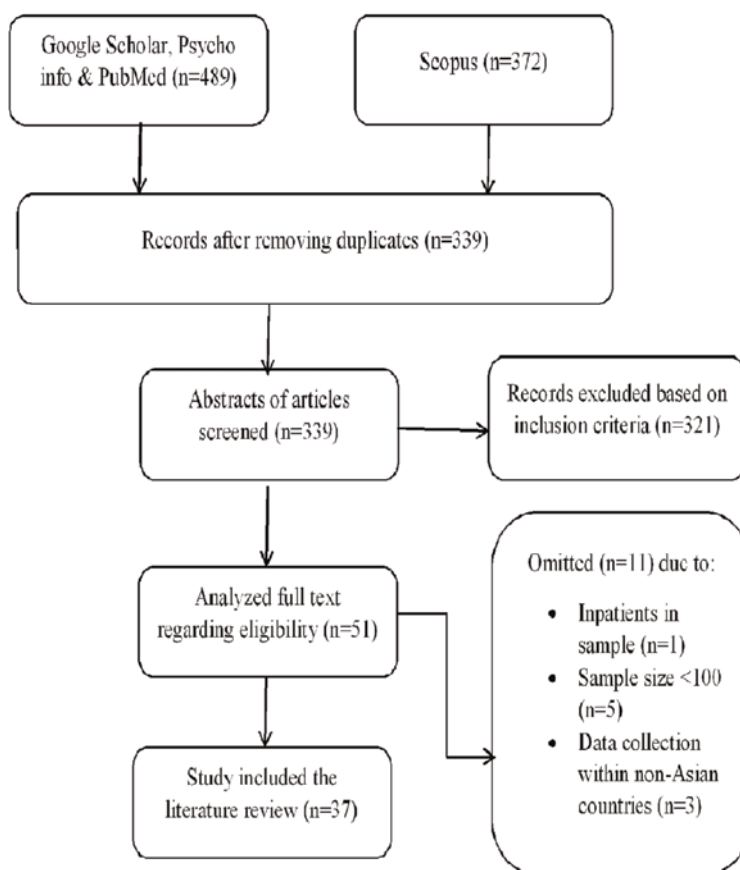


Figure 1. Flow diagram of the selection process.

the severity of the disease. For example, the more extended caregiving continues, the more the burden increases. In addition to this, these longitudinal studies and the other cross-sectional studies assumed the level of dependency of patients on their caregivers (known as ADL) as a strong determinant of the caregiver burden when ADL dependency is seen as a significant source of stress. The effects of dependency can be explained through an example that a higher level of dependency would mean more time and tasks required by caregivers, thus leading to higher levels of burden and vice versa.

On the other hand, the hours spent in a week or a month showed different results. In addition, the patient's type of disease also influences the caregivers' burden. Four studies have proven that diseases like dementia, physical disability, tumors, and co-morbidities relate to caregivers' burden. Lastly, the burden is also related to the patient's mental state, behavior, and cognitive abilities. These showed to be highly accurate in patients with dementia since such factors occur a lot in this case. In addition to the behavioral aspect, three different articles, which included both cross-sectional and longitudinal studies, reported on patients' cognitive abilities. They proved that patients' cognitive abilities affect the caregivers' burden. Lesser cognitive function caused a more significant caregiver burden and vice versa. The cross-sectional research showed some variances in burden if the caregivers were mothers, spouses, or daughters of the patients. That is why; it is probably a good idea to include relationship status in the longitudinal study, as it can provide valuable information about caregivers' burden. Here, results still need to be conclusive, and clear conclusions on living distance cannot be drawn.

#### 4 DISCUSSIONS

The primary purpose of this literature review is to generate results on caregiver burden determinants. Ensuring that the informal caregiving process is continuous must be explicitly highlighted in the context and culture of Pakistan. It will also help to identify difficulties faced by home base caregivers. Two main predictors of caregivers' burden were the duration of caregiving and the dependency level of the patient on the caregiver. The level of perceived burden increased with the increase in caregiving duration or the dependency level of the patient on the caregiver.

Along with being physically dependent, mental dependency in terms of behavior and cognitive abilities also influences the dependency level and, thus, the caregivers' burden. Certain illnesses, such as solid tumors or dementia, also cause an increase in burden levels. Even if it was found that caregiving duration is a significant predictor of burden, only a single study proved that dependency level also had a significant impact on burden levels. Although both the duration and time of caregiving had substantial impacts on the caregiving burden, the reason behind such substantial impacts still needs to be determined. Furthermore, role issues and conflict also caused an increase in caregivers' burden. Positive social support lowers the burden since it acts as a mediator between stressors and burdens. Background characteristics showed that females were more likely to experience a higher caregiver burden. Also, different relations with the patient led to varying caregiving burdens.

At last, the results were talked about as explanatory variables in this article. However, the underlying relations between these results could not be found since the studies did not find out these relations in either the theoretical or empirical tests. Future interventions can be derived from the recommendations based on the literature review. Initially, the risk factors of caregivers' burden should be clearly defined. According to the findings, female caregivers are considered more stressed due to providing intensive care as an informal caregiver predict to be a more significant burden. It is examined that female caregivers perform better than male due to social norms in our society; this leads to a threatening situation for informal caregivers in the future because more expectations are associated with female caregivers. Interventions should be practiced to improve or decrease the burden on caregivers. This

Table 1. Summary of findings.

Author, Year, Journal, and Country	Purpose of Study	Aim/Research Questions	Methodology	Significant Findings Relevant to Review
Nienke Lindt, Jantien van Berkel, Bob C. Mulder <i>BMC Geriatrics</i> (2020), Netherlands	Factors contributing to informal caregivers' burden	To enhance patients' and caregivers' quality of life, To identify factors contributing to caregivers' burden, and To provide assistance and support to informal caregivers at their doorstep.	peer-reviewed through systematic evaluation	A patient's resilience level and time spent on caregiving are primary factors contributing to the caregiver's burden. Shifting the caregivers' role could help to minimize their burden.
Dawn Frambes, Barbara Given, Rebecca Lehto, Alla Sikorski, and Gwen Wyatt <i>Western Journal of Nursing Research</i> 2017, USA	The most valuable assets in cancer treatment are patients' families and friends, who contribute to patient care and have personal significance.	Caregivers' various supportive mediations, appearances, behavioral responses, and caregiving consequences were investigated and identified.	Using meta-analysis along with systematic evaluation	(a) the latest literature associated with caregivers' importance, (b) identified exact activities required in the cancer patient caregiving process, (c) planned to mediate care programs for caregivers, (d) caregiving measurement inconsistencies, (e) finding caregivers features associated with precise identification of care activities, (f) insignificant outcome variables
McCormick, <i>Journal of Personalized Medicine</i> , 2015, Thailand	Describing caregivers' experiences comprehensively (thoughts and actions) and highlighting the problems faced during caregiving practice	To investigate caregivers' experiences concerning their behavioral responses and perception, To explore the phenomenological context background of experience.	Meta-synthesis	Cancer patients require professional assistance based on clinical practice. Policies are needed to elevate the negative consequences of behavioral responses.
Helena Ullgren, Theologia Tsitsic, Evridiki Papastavrou, Andreas Charalambous <i>International Journal of Nursing Studies</i> , 2018, Cyprus, Sweden	Prior research on pain control, symptoms and stress management, coping strategies from informal family caretakers	To highlight the role of family caregivers in handling adult cancer patients' consequences, signs, and symptoms at home throughout their disease.	Predetermined inclusion criteria help to identify 20 studies out of 1270 studies based on a systematic literature review.	Family caregivers work as healthcare professionals in treating symptoms and side effects of cancer patients at home. Family caregivers' daily routines involve examining, evaluating, monitoring, and deciding responsive behaviors and actions in managing cancer patients.
Israel Olatunji Gabriel, Joel O Aluko and Mohammed Ibrahim Okeme <i>Biomedical Journal of Scientific &amp; Techni-</i>	Cancer as the magnitude of the caregiver burden on the informal caregivers of women with breast cancer is explored in	To define the characteristics and magnitude of caregiving burden specifically in cancer patients, To pinpoint the determi-	The descriptive nature of the study was best explained by the descriptive design.	Assessing caregivers' burden, highest among informal caregivers, demands instant interventions, as the availability of

(continued)

Table 1. Continued

Author, Year, Journal, and Country	Purpose of Study	Aim/Research Questions	Methodology	Significant Findings Relevant to Review
cal Research Nigeria, 2019	Nigerian people.	nants of caregivers' burden between available resources and patients' characteristics, To identify association among burden, self-efficacy, and social support.		social support and self-efficacy, specifically for low socioeconomic caregivers, helps alleviate their burden.
Badii Amamou, Soumaya Fathallah, Dhekra Ammar, Ahmed Mhalla, Ferid Zaafrane and Lotfi Gaha Integrative Cancer Science and Therapeutics Tunisia, 2019	In identifying vulnerable caregivers, a systematic evaluation and an initial intervention measure are required	To determine the burden of caregivers of cancer patients, To identify burden contributing factors	cross-sectional study with descriptive design	Multiple demographic variables such as male, age range 40–50, time of caregiving more than one year, full-time employed, not having professional assistance in-home care service, and as a child of the patient are contributing factors to caregiver burden.
Simone M. C. H. Langenberg & Carla M. L. van Herpen <sup>1</sup> & Claudia C. M. van Opstall & Anke N. M. Wymenga & Winette T. A. van der Graaf & Judith B. Prins Supportive Care in Cancer 2019, Netherlands	The stress and exhaustion of caregivers before and after head cancer patients' treatment	To compare patients' and caregivers' quality of life, burden, and fatigue.	Radboud University Medical Center, Netherlands (2011–2013) conducted a pilot study.	The most prominent predictor for severe fatigue after the chemotherapy the patient was revealed to be the caregiver's everyday burdens before. The most significant risk factors for developing fatigue were female spouses already heavily burdened and having patients with poor quality of life.
Filiberto Toledano-Toledano and Miriam Teresa Domínguez-Guedea Bio Psychosocial Medicine 2019, Mexico	Children with complicated chronic illnesses are becoming a serious health concern. Sociodemographic and psychological characteristics might be the determinants of the caregiving burden.	To identify family factors and several variables such as multivariate socioeconomic, sociodemographic, and psychosocial as the causes of caregiver burden.	The National Institute of Health in Mexico City carried out cross-sectional research on caretakers of children's facing chronic diseases.	For caregivers of children with chronic illnesses, the burden heavily affected their social, personal, and family dynamics. Such findings can help to develop effective countermeasures and strategies to combat the caregiver burden.
Chang-Hae Park, Dong Wook Shin, Jin Young Choi, Jina Kang, Young Ji Baek, Ha Na Mo, Mee-Sook Lee <sup>5</sup> , Seon-Ju Park, Sang Min Park and Sohee Park Psycho-Oncology, 2012 Korea	Caregiving is an emotional burden, too, comprising positive and negative affective aspects during caregiving.	To examine causes of positivity and caregivers' burden of terminally ill patients in Korea.	A multicenter cross-sectional survey	A practical method of combating caregiver burden is support from the rest of the family and communication about one's burdens and prompt other family members to help them in their tasks.

*(continued)*

Table 1. Continued

Author, Year, Journal, and Country	Purpose of Study	Aim/Research Questions	Methodology	Significant Findings Relevant to Review
Ruttana Phetsitong <sup>1</sup> , Patama Vapattana-wong <sup>1</sup> , Malee Sunpuwan, Marc Volker PLOS ONE, 2019, Thailand	Psychological burden as a result of household caregiving process to elderly persons.	To assess the household caregiving needs and trends, To discover the psychological vulnerability of caregivers.	Older Persons Survey used as secondary data analysis	The aging of older generations makes them increasingly more dependent on a caregiver, increasing the burden on the caregiver. This statement is prominently true for low-income households with dependent elders.
Lixia Ge, MSc, Siti Zubaidah Mordiffi, PhD, RN	Older cancer patients demand extensive care and place much burden on a family member; emphasizing feature dynamics of burden helps to elevate its negative consequences.	To identify the characteristics significantly contributing to caregivers' burden on family caregivers.	Seven electronic systematic databases inception	Younger caregivers reported having a more significant burden while supporting patients with tumors and helping them in numerous daily activities.

literature review directs valuable and exciting research opportunities for the future. Findings could help relieve the burden and optimize the interventions for informal caregivers' capacity to encounter stressful situations. Lastly, it was assessed from the selection process that many studies appeared in Asian countries, where cultural norms are quite different from other countries. The comparative study must conduct between Asian and Western countries because it would be an exciting exploration.

## 5 CONCLUSIONS

In light of the current literature review, several factors led to caregiver burden. Gender, patient affinity, age, education level, and caregiving duration are significant predictors. Affinity with the patient is examined as the most vital determinant of caregiver burden. Duration of caregiving is also a risk factor of burden for the caregivers. The age of the caregiver also led to a higher burden. Uneducated caregivers feel more burden of care than educated ones because education empowers the capability of coping with a stressful situation.

Furthermore, patients' cognitive capacity, dependency level, and behavioral problems cause a burden. Interventions are needed to relieve the burden of providing intensive care among caregivers to patients. Interventions should be adopted for the caregivers to desensitize their burden of care. Healthy coping styles should be taught to them to encounter stressful situations during treatment. According to this study, most studies were cross-sectional and were not explained through detailed research designs. In light of these researches' concepts need to be correctly defined. Qualitative studies are not perceived as the best way to understand the determinants of the caregiver burden. Here, only the quantitative studies were analyzed because insight into the research phenomenon is cleared scientifically. Articles are selected from all over the world level on the perspective of factors of caregivers. Finally, this systematic review has particular and specific strengths.

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# The implementation of sexuality education through parent's Ethnopedagogy in family

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**ABSTRACT:** Significant social changes in the last few decades have affected students' behavior, both in the academic and social environment. As the leading social institution, parents have a central role in supervising and affectionating students' social lives. This research focuses on revealing the Ethno pedagogy of parents in carrying out sex education in the family environment. This exploratory study was conducted on 60 research subjects as representatives of secondary education level parents in Sidoarjo Regency, whose work background is as a civil servant. The results of this study indicate that parents have a good understanding of sexuality that can be used to educate children about sexuality based on values, norms, and belief systems. However, this pattern of sexual education has not been implemented openly for children. This study recommends further research to harmonize parents and schools in implementing sex education.

## 1 INTRODUCTION

Education can not only be given from school through teachers but also from home or family through parents. Suppose children get a complete education from school and home. In that case, it can make education a bridge for the progress of a nation because the progress of education is a determinant of the quality of human resources (Akmal & Santaria 2020). Education from home can be done through inculcating positive values whose intensity can be more profound, such as instilling character education, religious education, and even sexual education, or in other words, sex education. Sex education is an educational effort that aims to develop and strengthen the ability of children and adolescents to make conscious, satisfying, healthy, and respectful choices regarding relationships, sexuality, and emotional and physical health. Encourage children and adolescents to have sex (Education 2015). Sex education is more appropriate if it is interpreted as sex education, which is education about sexuality in a broad sense. Sexuality includes various aspects of sex, namely biological aspects, orientation, socio-cultural and moral values, and behaviour (Yafie 2017). Sex education teaches and gives understanding and explains issues related to sex, instincts, and marriage to children since their minds begin to grow. They are ready to understand sex and irresponsible behaviour (Nurlaeli 2020).

The topic of sex education is being debated in many countries. This may be because sex education is still considered taboo by the public or because its delivery and application are deemed inconsistent with their cultural values and beliefs. As an example, in Romania, sex education is a highly debated and controversial topic and has sparked earnest contradictory discussions, not only among civil society but also among experts (teachers, psychologists,

and government officials), the main reason for this being that the public has a general perception that sex education is only limited to transmitting information about sexual reproduction or sexual anatomy (Costin & Vignoles 2020).

Many parents are also aware of the importance of sexual education for their children. Because they realize that sexual education by parents for their children can help improve parent-child communication about sexuality and help prevent sexual harassment and violence in the future. However, many parents are still reluctant to discuss sexual problems with their children because of the sensitivity of the topic and their lack of knowledge about sexual health (Azira et al. 2020).

Western countries have had curricula that have made sexual education a separate subject for more than half a century, which started in Sweden and then spread to other European countries and even to the Americas (Federal Center for Health Education 2016). In Indonesia itself, the implementation of the curriculum for sexual education is not yet comprehensive; it still does not stand alone but is integrated (insertion) into specific lessons and programs rather than in the form of special lessons or subjects (Nuryadin 2019). This is why sexual education at home is essential for children, especially those who are in the phase of adolescence. Adolescence is a transition from childhood to adulthood during which one experiences the development of all aspects or functions necessary to enter adulthood (Saputro 2018).

### 1.1 *Teens sexual violence*

Without ignoring the reality of society in responding to the sex education controversy as explained earlier, the fact is that nowadays, children, especially at the age of teenagers, need even to be said to need to get sex education in order to provide knowledge about how special they are from head to toe, as well as the importance of caring for and keeping themselves. In addition, to avoid sexual behaviour that is not healthy, as well as irregularities, sexual harassment, and violence, both to avoid being a perpetrator and victim. Data shows that children in their teens are vulnerable to being perpetrators or victims of sexual harassment or violence. By mid-2020, compiled from the online information system for the protection of women and children, there were 1,902 cases of sexual violence against women and children. Other data from the women's national commission 2021 Annual Notes shows that there are 351 girls who become perpetrators of sexual violence with range age of 14–17 throughout 2020, both in the personal and public domains, while the number of victims with the same age range is 1172 (Komnas Perempuan 2021).

Furthermore, based on data sources from KPAI, it was stated that there were 207 children who became victims of sexual harassment and violence in academic units throughout 2021, with details of 126 girls and 71 boys. Sexual violence afflicts children with an age range ranging from 3 to 17 years. With details, 4 per cent of kindergarten children, 32 per cent of elementary age, 36 per cent of junior high school age, and 28 per cent of senior high school age.

The data above can be used as the basis for why sex education needs to be instilled in children, especially in their teens. One of the efforts to instil sex education can be made from the social environment closest to the child, namely the family. Especially if you look at the fact that Indonesia is not like other countries in Europe, where the curriculum with subjects regarding sex education is not adequate, then the oldest family members, namely parents, must have a role in instilling sex education in their teenage children. In this case, it is related to the function of family education that must be carried out by parents, which is related to the prevention of sex education. By being provided with good sex education, it is hoped that children will understand the actions that need to be taken when dealing with problems of sexuality and anticipating other sexual disorders. Do not let children become victims of sexual violence because of the lack of sex education that is understood by children, which makes them the victims themselves. They do not realize they are victims because of their limited knowledge (Noviana 2015). In fact, children who experience sexual harassment or

violence will experience long-term psychological trauma which can have a fatal impact if they commit suicide (Hanifah, et al. 2021). Thus, research on the role and strategies of parents in instilling sex education in adolescents in the family environment is exciting to study.

Sexual harassment, more commonly known as sexual harassment, is unwanted sexual attention. Sexual harassment can include both physical and non-physical contact. Physical contact includes kissing, hugging, and touching. Non-physical contact such as messages, sexual remarks, jokes, sexual cues, viewing or displaying sexually explicit images or notes or sharing sexually-related humour, exposing “pubic” devices, photographing, and recording someone without permission in the shower and sharing it (De Lijster et al. 2017). Sexual harassment is said to be an epidemic throughout the education system globally and impacts individuals, groups, and entire organizations in profound ways (Bondestam & Lundqvist 2020).

Comprehensive sexual education is based on a learning curriculum on the physical, cognitive, emotional, and social aspects of sexuality (Herzig van Wees et al. 2020). Sexual education is essential in socializing about healthy sexuality, and adolescents have the right to obtain correct and complete information (Laura D. Lindberg & Kantor 2022). The importance of sexual education in prevention efforts to reduce sexual harassment, especially in adolescents with sexual minorities, is well documented (Hequembourg, Parks & Vetter 2008). Harassment in the school environment is considered an embarrassing and intimidating thing that impacts students’ psychological and physical condition. In the school environment, sexual harassment is considered a broader form of violence (López et al. 2020). Sexual education is the shared responsibility of both parents and schools. Comprehensive sexual education is beneficial for children to gain knowledge, skills, attitudes, and values to foster a positive view of students toward sexuality in accordance with their emotional development.

The parties responsible for implementing comprehensive sexual education are the government, schools, and parents of children. Serious efforts made by the government to prevent acts of sexual violence include the emergence of Permendikbudristek No. 30 of 2021 concerning sexual violence and efforts to achieve justice and gender equality. Meanwhile, the role of parents is vital in providing sexual education for their children, considering that sexual problems are private, so it is best if they are taught as early as possible (Lumban Gaol & Stevanus 2019). Sexual education is considered a form of sex promotion and the avoidance of sexual harassment and other harmful things (Mirsepassi et al. 2022). This statement shows how important it is to implement comprehensive sex education for youth, both formally and informally. Efforts to prevent sexual harassment are divided into three categories: primary prevention by establishing policies and sexual education; secondary prevention by early identification of the possibility of sexual harassment; and tertiary prevention that is more proactive and responsive (Braileanu et al. 2021).

## 1.2 *Family and sexual education*

Families (parents) are responsible for educating students to provide information about sexual health, one of which is parents as primary educators, who are considered the most responsible for providing sexual education to children (Pop & Rusu 2015). Parents are expected to modify interactions with children to encourage positive behaviour because good communication regarding sex issues can be an essential protective factor in preventing risky sexual behaviour among adolescents (Lee et al. 2022). Parents need to understand that sex education will be helpful in cultivating moral attitudes in children and helping students be able to adjust to the norms and values in society and prevent health problems such as infectious diseases, abortion, and child neglect (Esan & Bayajidda 2021).

Sexual education is part of the field of general education that we know. Sexual education is one of the essential things in life and requires a profound effort to study. This is because sexual education can significantly influence the formation of human personality, including

thoughts, emotions, and behaviours (Asgharinekah et al. 2019). Apart from formal education institutions such as schools, sexual education can also be provided in the family. This is very important and serious in order to protect children who are considered vulnerable to sexuality issues. Of course, provisions from the family, especially parents, are essential. Parents are the first and foremost individuals in fostering the growth and development of children, so the provision of sexual education should be given directly by parents when their children begin to enter the early stages of puberty (Nurwaidah, et al. 2014) in order to increase understanding of respectful relationships and improve health for adolescents (Corona et al. 2016).

There are several reasons why sex education is essential, both broadly and specifically in the family environment, including providing knowledge and skills to avoid or reduce the risk of transmission of sexually transmitted diseases such as HIV/AIDS, STIs, and unwanted pregnancies (Denford et al. 2017). Providing knowledge about the functions of the reproductive organs so that children can take care of themselves when they are outside the home and be aware of the people around them, both people they do not recognize and people they recognize (Sulfasyah & Nawir 2016) Forming humans who have the ability to adapt to their partners, society, and environment and later be able to establish harmonious relationships and not cause adverse effects for themselves, their partners, and society in carrying out their sexual life (Erik Yohanis & S. S. Pakey 2016) can prevent teenagers from storing sexual fantasies and help understand puberty in adolescents and provide an understanding of the role of gender (Lestari & Octamaya 2020).

The benefits of sexual education for children are 1) to find out sexual information for teenagers; 2) to have an awareness of the importance of understanding sexuality issues; 3) to have an awareness of sexual functions; 4) to Recognize adolescent sexuality issues; 5) Recognizing the factors that can lead to sexuality issues (Ratnasari & Alias 2016). Efforts to inculcate sexual education in the family environment are expected to increase national awareness regarding efforts to protect the nation's generation from misinformation about sexuality (Muhammad 2011). Through sexual education in the family environment, it is hoped that teenagers can change negative views about sexuality and put the issue of sex in the correct position and not be blasphemous in its interpretation.

Several studies above have explained the importance of sex education for the younger generation in several ways. Those are school curriculum, social environment, and family responsibility. These studies are interesting because the studies above didn't tell us the family's ways of delivering knowledge about sex education. These studies aim to explore the parents' way of implementing sex education through Ethno pedagogy in a family atmosphere. Studies about sex education through school programs fail to address the interplay among gender, race, class, and sexuality while simultaneously propagating sexist, racist, and classist notions of sexuality (Bay-Cheng 2010). Those studies form the foundation of this study to integrate family roles and the school system to maintain a suitable sex education for teens. Consider the effectiveness of sex education through both parent-centred and school programs (Pop & Rusu 2015). It is essential to explore family Ethno pedagogy more than school programs in strengthening sexual education.

## 2 METHOD

This study used a qualitative approach with an experimental method. This study explores the Ethno pedagogy of parents in carrying out sexuality education, which has been carried out in the family environment. The subjects of this study were 60 people, including parents of representative students from State Junior High School 1 to State Junior High School 6 in Sidoarjo Regency. The qualifications of parents who are the subjects of this study are those who have a livelihood as civil servants—assuming that these parents understand various policies, laws, and regulations regarding sexuality.

The stages of this research are referred to (Johnson & Christensen 2014) and consist of four steps. These are; (1) Determine Research Questions by focusing the studies on exploring family Ethno pedagogy in sex education, (2) Create the study by selecting Qualitative as the appropriate research design for this study. (3) Collect data using a questionnaire containing several indicators and distribute it to 60 research participants. This research's (4) Analyze Data refers to (Miles & Michael 1994) through (a) understanding the data, (b) data analysis, (c) data reduction, (d) data presentation, and (e) drawing conclusions and verification.

This research focuses on the Ethno pedagogy of parents in implementing sex education, which has been carried out in the family environment. Ethno pedagogy is understood as an approach in education that offers a culture-based concept, or precisely local wisdom, with the following characteristics: (1) based on experience; (2) empirically tested for years; (3) can be adapted by modern culture; (4) inherent in personal and institutional life; (5) commonly done by individuals and groups; (6) is dynamic; and (7) related to belief systems. Meanwhile, sex education is observed to have three components, namely: (1) gender, including gender and sex differences; (2) reproductive health; and (3) sexual rights and human rights. The data collection technique used is a questionnaire. The data analysis technique used descriptive statistics calculated by the percentage technique.

### 3 RESULT AND DISCUSSION

Sexuality is understood as a socio-cultural process that directs human desire or lust. However, sexuality is influenced by many things, such as biological, psychological, social, economic, political, religious, and spiritual factors. Sexuality is a positive thing related to one's identity and honesty. Sexual education, or sex education, for children is an essential dimension in order to avoid and not commit acts of sexual harassment. The sexual education carried out by parents of junior high school students in Sidoarjo Regency can be observed in the following table.

Table 1. Ethno pedagogy of parents in implementing sexuality education in the family environment.

No.	Component	Scale/Percentage				
		1	2	3	4	5
Gender						
1	Conceptual understanding of gender and sex differences	25 (41.7%)	5 (8%)		20 (33%)	10 (16.7%)
2	Understanding Gender roles and attributes in family and society				5 (8%)	55 (92%)
3	Explanation Perceptions of masculinity and femininity in the family and their development in life				20 (33%)	40 (66.6%)
4	Understanding Gender Position in Changing norms and values in society				13 (21.6%)	47 (78.3%)
5	Understanding Manifestations and consequences of gender bias	13 (21.6%)	7 (11.6%)		23 (38.3%)	7 (28%)
6	Understanding Stereotypes and inequalities (including self-stigmatization) at family and community levels	24 (40%)	6 (10%)		13 (21.6%)	17 (28.3%)

(continued)

Table 1. Continued

No.	Component	Scale/Percentage				
		1	2	3	4	5
<b>Health Reproduction</b>						
1	Understanding the concept of sexuality and the life cycle (puberty, menopause, stigma, sexual problems)				25 (41.7%)	35(58.3%)
2	Understanding of Anatomy	13 (21.6%)	17 (28.3%)		15 (25%)	15 (25%)
3	Understanding the Reproductive Process in detail	13 (21.6%)	18 (30%)		14 (23.3%)	15 (25%)
4	Explanation of how to use a condom	25 (41.7%)	15 (25%)		11 (18.3%)	9 (15%)
5	Explanation of forms of contraception and emergency contraception	23 (38.3%)	17 (28.3%)		5 (8%)	5 (8%)
6	Explanation of pregnancy options and information	13 (21.6%)	23 (38.3%)	4 (6.6%)	7 (11.6%)	13 (21.6%)
7	Abortion explanation, legal and safe	25 (41.7%)	20 (33%)	5 (8%)	7 (11.6%)	3 (5%)
8	Unsafe Abortion Explanation	23 (38.3%)	25 (41.7%)	3 (5%)	10 (16.7%)	9 (15%)
9	Understanding sexually transmitted infections (STIs) and HIV, including their transmission and symptoms	10 (16.7%)	15 (25%)	3 (5%)	20 (33%)	12 (20%)
10	Explanation of HIV and STI Prevention	15 (25%)	10 (16.7%)		22 (36.6%)	23 (38.3%)
11	Explanation Prevention of transmission of the virus from mother to child	15 (25%)	15(25%)		22(36.6%)	8 (13.3%)
12	Explanation of Injections and HIV	15 (25%)	15 (25%)		22(36.6%)	8 (13.3%)
13	Understanding Virginity	7 (11.6%)	13 (21.6%)		5 (8%)	35 (58.3%)
14	Understanding Abstinence and fidelity	5 (8%)	5 (8%)		15 (25%)	35 (58.3%)
15	Understanding Sexual Response	25 (41.7 %)	20 (33%)		5 (8%)	10 (16.7 %)
16	Understanding Social Expectations	10 (16.7%)	5 (8%)		20 (33%)	25 (41.7 %)
17	Explanation Confidence and empowerment, respect for the body				25 (41.7 %)	35 (58.3%)
18	Explanation of Myths and Stereotypes				15 (25%)	45 (75%)
<b>Sexual rights and human rights</b>						
1	Knowledge of human rights and national policies	3 (5%)	7 (11.6%)		20 (33%)	30 (50%)
2	Legal Explanation relating to sexuality	7 (11.6%)	13 (21.6%)		15 (25%)	25 (41.7%)
3	Explanation of the rights approach to sexual and reproductive health		3 (5%)	7 (11.6%)	22 (36.6%)	28 (46.6%)
4	Understanding of social, cultural and ethical boundaries in sexual and reproductive health rights	5 (8%)	12 (20%)		18 (30%)	25 (41.7%)
5	Description of the available services and how to access them				25 (41.7%)	35 (58.3%)
6	Participation Explanation	10 (16.7%)	5 (8%)		12 (20%)	33 (55%)
7	Practical understanding and norm				25 (41.7%)	35 (58.3%)
8	Understanding the diversity of sexual identities	15 (25%)	7 (11.6%)		13 (21.6%)	25 (41.7%)
9	Advocacy Explanation	5 (8%)	12 (20%)		13 (21.6%)	30 (50%)
10	Explanation of self-protection	6 (10%)	15 (25%)		14 (23.3%)	25 (41.7%)
11	Negotiation skill explanation	4 (6.6%)	13 (21.6%)		17 (28.3%)	26 (43.3%)
12	Explanation Consent and the right to only have sex when ready	7 (11.6%)	14 (23.3%)		14 (23.3%)	35 (58.3%)
13	Explanation Right to express sexuality safely and healthily	6 (10%)	15 (25%)		14 (23.3%)	25(41.7%)

Information:

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. I Strongly Agree

Sex is a given thing. On the other hand, sexuality is a socio-cultural construction. Sexuality is a more abstract concept, covering countless aspects of human existence, including physical, psychological, emotional, political, and matters related to various human habits. Sexuality, as socially constructed, is a complex expression and denial of feelings and desires. The construction of sexuality is built from the point between two axes of interest; self-subjectivity (who and what we are) and society's subjectivity. Sexuality is an inclusive term with many dimensions, such as relationships, recreation, procreation, emotional, physical, sensual, and spiritual. The concept of sexuality includes not only the biological and psychological but also the social and cultural dimensions of sexual identity and habits. Based on the table above, three components of sex education are observed, namely: (1) gender, (2) reproductive health, and (3) sexual rights and human rights.

### 3.1 *Gender*

Gender is a set of characteristics that bind and distinguish masculinity and femininity, which includes gender, gender-determined, or gender identity. If observed from the data in the table above, the Ethno pedagogy of parents in carrying out sexuality education in the gender component is observed through six indicators, giving rise to two categories of answers, namely the homogeneous answer category and the heterogeneous answer category.

First, the category of homogeneous answers. This means that parents agree to have carried out sexuality education in terms of (1) understanding the roles and attributes of gender in the family and society (100%); (2) explanation of the perception of masculinity and femininity in the family and its development in life (100%); and (3) understanding of gender position in changes in norms and values in society (100%). They admit that the implementation of sex education for children is carried out not at a particular time but in the form of advice, advice, and reprimands for the words, actions, and items worn by their children.

Second, the answer categories are heterogeneous. This means that parents have different Ethno pedagogy in sexual education with the following indicators: (1) conceptual understanding of gender and sex differences. Conceptual understanding of gender and sex differences. They disagreed (49.5%), and the rest strongly agreed (51%). Those who disagree admit that they do not understand the concepts of gender and sex and prefer to understand children through attitudes and actions; (2) understanding the manifestations and consequences of gender bias.

Regarding this indicator, 20 people (33.3%) said they disagreed that parents should provide insight to their children regarding the manifestations and consequences of gender bias. They assume that the values and norms in society are well-organized and, if implemented, no party will feel disadvantaged. Meanwhile, 40 people (66%) have the view that understanding related to gender bias must be conveyed to children in order to have gender justice; (3) understanding stereotypes and inequalities (including self-stigmatization) at family and community levels. Regarding this, parents of students have different views; as many as 30 people (50%) disagree, and the rest agree. What is meant by gender stereotypes is to simplify the different roles between men and women. For parents who disagree with this stereotype, it has become part of instilling values and norms in children. Meanwhile, those who agree think that understanding stereotypes and inequality (including self-stigmatization) is so that children can respect others according to how they should be.



Understanding gender has the same meaning as understanding sexuality education. The basis of sex education is understanding gender, as the studies state that gender and sexuality norms influence students' better understanding of sex education (Browes 2015). From the data in Table 1 above, most families still need further gender understanding to explain sexual education for their children. Gender knowledge makes it simple for families to explain gender to their children.

### 3.2 *Reproduction health*

Reproductive health can be interpreted as a healthy condition concerning a child's system or components and reproductive processes. In this regard, the government has a Youth Reproductive Health program. This program facilitates adolescents' healthy reproductive system status by providing information, counselling services, medical referrals, life skills education, and youth flashes. The role of parents in the family has a strategic role. Parents have an emotional connection and are expected to be able to play a significant role in this sex education.

Several conclusions can be drawn regarding the components of reproductive health, as shown in the data in the table above. First, there are limitations regarding parents' cognitive knowledge. Several indicators fall into this category. Parents agreed (100%) to understand the concept of sexuality and the life cycle (puberty, menopause, stigma, sexual problems). They consider it essential to be explained to children to have a good understanding. Some of them did not agree that they had to explain the anatomy (33%), the reproductive process (51%), and understanding of sexually transmitted infections (STIs) and HIV, including transmission and symptoms (42%). Explanations on the Prevention of HIV and STIs (43%) Explanations on the prevention of transmission of viruses from mother to child (30%) description of injections and HIV (30%). They stated that they disagreed because they did not understand the various concepts scientifically.

Second, there is a clash of values in society. The Ethno pedagogy of parents in conducting sex education is bound by the norms that exist in society. They think the following indicators of reproductive health components are considered necessary, but some do not explain them clearly to their children because they are considered taboo. These components are (1) an explanation of how to use a condom (66.7%); (2) a description of forms of contraception and emergency contraception (67%); (3) an explanation of pregnancy options and information (60.1%); (4) description of legal and safe abortion (72%); (5) explanation of unsafe abortion (80%); (6) understanding of virginity (33.3%); (7) understanding of sexual response (74.7%), and (8) understanding of social expectations (24.7%).

Third, it is significant to the values and norms that exist in society. There are several components of reproductive health that are by the norms of society, so they strongly agree and implement them in their child's sexuality education. The indicators are (1) understanding of abstinence and loyalty (90%), (2) explanation of self-confidence and empowerment, respect for the body (100%), and (3) explanation of myths and stereotypes (100%).

The studies from 2006–2013 found that adolescents lost their parental communication and formal sex education and that their reproductive health decreased yearly (Laura et al. 2016). Those conditions align with these studies that show parents need further knowledge about sex education to maintain their children's healthy reproduction. Parents know that several sexual diseases have emerged, but they do not know how to solve them and understand their children well.

### 3.3 *Sexual rights and human rights.*

Sexual rights are part of human rights that regulate sexuality. This section's component of sex education is more about how the state regulates a person's sexual rights. Generally, parents have not carried out sex education related to this, except for understanding practices

and norms (100%). Regarding this section, parents understand that sexual norms and practices have been regulated in people's lives, embodied in moral norms. Furthermore, most of the data from this component speak more about parents' views regarding the components of sexual rights and human rights from their ethno-pedagogical perspective. They strongly agree that sexuality education includes the following components, namely: (1) knowledge of human rights and national policies (83%); (2) legal explanations related to sexuality (61.7%); (3) explanation of the rights approach in sexual and reproductive health (83.2%); (4) Understanding of sexual and reproductive health rights' social, cultural, and ethical boundaries (71.7%);(5) A description of the available services and how to access them (100%);(6) Participant explanation (75%);(7) Recognizing the variety of sexual identities. Understanding the diversity of sexual identities (63.3%); (8) Advocacy Explanation (71.6%); (9) Self Protection Explanation (65%); (10) Negotiation Ability Explanation (71.6%); (11) Consent and the right to have sex only when ready (81.6%); (12) Explanation of the right to express sexuality safely and healthily (65%).

Sexuality is a private case in human life. Sexuality is an individual right, and no one can intimidate those rights. However, since sexual diseases have emerged, every country has developed the role of sex education to maintain human rights and sexual health. According to Miller et al. (2015), research on policy and sexual health and rights promotes sexuality as a privacy aspect, and maintaining sexual health is a shared responsibility between the public and the state. This study supports those explanations about maintaining sexual health as a joint responsibility, even if it is necessary to provide parents with a brief explanation of sexuality as a human right.

#### 4 CONCLUSION

Here are three things that can be concluded from the Ethno pedagogy of parents in carrying out sexuality education in the family: (1) Parents still have minimum sexuality education knowledge that they can share with their children. They use their experience, values, norms, and belief systems as the basic knowledge to share with their students; (2) parents do not openly explain sex education to their children because they think sex education is still taboo to discuss; then (3) parents do not yet have a good understanding about sexuality as the human right that has to strictly explain to their children to maintain sexual health and sexual right. However, parents know that sexual rights are an essential dimension of sex education for children that have to discuss when their children are already mature.

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## Gender resilience in Indonesia

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**ABSTRACT:** This study aims to reveal the level of resilience of adolescents and the relationship between gender and education level. The sample of this study consisted of 6,507 adolescents from junior high school (SMP) with a total of 5,208 adolescents and 1,299 adolescents from high school (SMA), consisting of 3,760 women and 2,747 men in Indonesia. This data collection technique was taken using a survey via Google Form, which was distributed using a resilience scale (Thompson). To test the effect of gender and education level on the level of resilience using the ANOVA test. In terms of resilience, there is a total average score where the average resilience level is ( $M = 20.08$ ) with a standard deviation of 4.614. Gender has an average of ( $M = 1.58$ ) with a standard deviation of 0.494. The school level has an average of 2.20 with a standard deviation of 0.400. From the table, it can be concluded that resilience at the school level is higher. The effect of gender (male and female) on resilience was tested with a significance level of  $0.211 > 0.05$  and the magnitude of  $F = 1.563$  with  $M = 33,224$ . In the two tables above, it can be concluded that in terms of gender, male  $M = 19.80$  with a standard deviation of 4.732 and female  $M = 20.23$  with a standard deviation of 4.449 at the Junior High School (SMP) level. For high school (SMA) for males,  $M = 20.21$  with a standard deviation of 4.779, and for females,  $M = 20.13$  with a standard deviation of 4.800.

### 1 INTRODUCTION

Adolescence can be seen as a time when a person is transitioning from childhood to maturity. During this time, the person will experience various internal transitions (Wasono 2019). Teenagers are the next generation that must possess a strong personality to contribute to the future development of a better nation. Adolescents must be extremely self-assured and determined to be able to rapidly rebound from the challenges and unpleasant experiences that they encounter in life (Masnina 2017).

The teenage years can be turbulent and shocking, and they may start to experience troubles in their personal lives (Dewi & Henu 2015). Teenagers now lead new lifestyle modifications as a result of the shifting times. Teenagers must continue to thrive, cope, and find solutions to their issues. Teenagers frequently make poor choices in this situation if they are unable to manage the issues that arise before them. According to cognitive theory (Santrock 2011), the adolescent prefrontal cortex, which is involved in the functions of reasoning, decision-making, and self-control, is still developing, while the amygdala, which is responsible for emotion, begins to develop early. Consequently, teenagers tend to lack self-control.

In May 2021, there was a juvenile case in Bali, which led to a rise in juvenile delinquency. It is believed that it began with incidents of theft and has progressed to illegal racing since teens were unable to make the most of their free time. The next instance involves a teen who

committed suicide because of getting overburdened with academic responsibilities (Fahrudin 2012). This kind of abnormal behavior is an illustration of impulsivity. According to a study by Esteban and Taberero (2011), impulsivity in teenagers is closely related to deviant and disruptive conduct.

Every person with dysfunctional issue resolution is discovered to be influenced by both internal and external influences, including family, closest friends, and the environment, which frequently lacks a sense of security and frequently fosters rejection or neglect (Goldstein & Naglieri 2011). Those with limited emotional control are more likely to engage in avoidant or avoidant conduct to solve problems (Cohen 2016). In the context of resilience, elements that affect people's ability to solve this challenge are strongly tied to both protective and risk factors. The sense of connection that a person has to their surroundings is one of the protective elements in the context of resilience. Risk variables, meanwhile, are associated with negative emotional responses in the context of resilience.

Resilience is the capacity of a person to adapt in the face of adversity (Garagiola 2022). People with strong resilience have low-risk factors, which allow them to manage their emotions during times of crisis, and high protective factors, enabling them to handle challenges as evidenced by their positive adaptive behavior (Cutuli 2018). Psychological resilience and adaptability are seen as a process of adjusting to a normal life pace (Erdogan 2015). Positive adaptive behavior includes actions that are appropriate for the developmental stage, actions that don't promote crime, and actions that don't display undesirable behavior. Positive adaptation enhances a person's capacity for problem-solving, which is one of the characteristics that distinguish someone with high resilience (Masten 2014). As a result, maladaptive adaptation behavior is predicted in those with low levels of resilience. In some studies, resilience is seen as a personal trait, but in others, it is seen as a quality that must be acquired over time and a process that is produced by the interaction of environmental elements. The more prevalent viewpoint holds that resilience is a process revealed as a result of the interaction of numerous circumstances in the event of one's experiences with difficulties, rather than a personal and innate trait. Resilience is influenced by several things. The individual's environment at home, at school, and with family are all important (Erdogan 2015).

The researchers observed the impact of resilience on each person based on the description provided above. According to research by Michelson (2015), social issue resolution in people has a substantial association. According to studies (Karadağ & Eroğlu 2020), resilience has an impact on how well people solve societal problems. The majority of research on resilience has been done on kids who have experienced challenging circumstances. Edmoson (2022) discovered that when these adolescents are successful in creating new connections, they begin to get out of these bad circumstances. To advance the past study, the researcher seeks to determine whether there are differences between junior high school (SMP) and high school (SMA) students in Indonesia in terms of resilience levels, as well as whether there are disparities between male and female students.

## 2 METHOD

### 2.1 *Research design*

This study used 6,507 adolescents, consisting of 42% males and 58% females, as many as 79% of junior high school (SMP) students and 21% of high school students (SMA). This data is taken from 2021–2022 in Indonesia.

### 2.2 *Participant*

This study used 6,507 adolescents, consisting of 42% males and 58% females, as many as 79% of junior high school (SMP) students and 21% of high school students (SMA). This data is taken from 2021–2022 in Indonesia.

### 2.3 Measure

Perseverance, reflection, and help-seeking are the three components that make up this study's measure of academic resilience, emotional reaction, and negative impact (Cassidy 2016). The Student Academic Support Measure (SASS), which has four components: informational support, esteem support, motivational support, and venting support, was employed in this study as the peer social support scale (Thompson 2009).

### 2.4 Data collection

This data collection was carried out from 2021–2022 in Indonesia using a purposive sampling technique. This data retrieval was taken using a Google Form, which was distributed via a link.

## 3 RESULT AND DISCUSSION

In calculating the data, the results of descriptive statistics are presented as follows:

Table 1. Descriptive statistics.

Gender	School-level	Mean	Std. Deviation	N
Boy	SMP	19,80	4,732	2093
	SMA	20,21	4,779	654
	Total	19,89	4,745	2747
Girl	SMP	20,23	4,449	3115
	SMA	20,13	4,800	645
	Total	20,21	4,511	3760
Total	SMP	20,06	4,569	5208
	SMA	20,17	4,788	1299
	Total	20,08	4,614	6507

In terms of resilience, score of average resilience level is  $M = 20.08$  with a standard deviation of 4.614. Gender has an average of  $M = 1.58$  with a standard deviation of 0.494. The school level has an average of 2.20 with a standard deviation of 0.400. From the table, it can be concluded that resilience at the school level is higher. Then the analysis continued with the ANOVA test.

In Table 2, it is found that the effect of gender (male and female) on resilience has a significant level of  $0.211 > 0.05$  and a magnitude of  $F = 1.563$  with  $M = 33,224$  for the effect of the type of school level (junior high school and high school) on resilience with a significance level of  $0.278 > 0.05$  and the magnitude of  $F = 1.177$  with  $M = 25,011$ . The influence of gender and education level has a significant level of  $0.075 > 0.05$  and the magnitude of  $F = 3.172$  in  $M = 67.418$ .

Table 2. Resilience ANOVA test results.

Resilience	Mean Square	F	Sig.
Gender	33,224	1,563	0,211
School Level	25,011	1,177	0,278
Gender * School Level	67,418	3,172	,075

In the two tables above, it can be concluded that in terms of gender, male  $M = 19.80$  with a standard deviation of 4.732 and female  $M = 20.23$  with a standard deviation of 4.449 at the Junior High School (SMP) level. For high school (SMA), for males  $M = 20.21$  with a standard deviation of 4.779, and for females,  $M = 20.13$  with a standard deviation of 4.800.

#### 4 CONCLUSION

This research was conducted with 6507 samples of junior high school (SMP) and high school (SMA) youth in Indonesia. The resilience scale is given to adolescents to assess the effect of resilience on gender and school level on the level of resilience. In this study, it was found that the influence of school level on resilience had a significant effect. Furthermore, the influence of gender on resilience also has a significant effect. It can be seen that men at the high school level (SMA) have higher resilience than men at the junior high school level (SMP). Likewise, women in high school have higher resilience than women at the junior high school (SMP) level. However, because of the dominant gender difference, men have a higher level of resilience than women. This supports with research conducted by Ijadi (2002).

Indonesian youth are dominated by women. When compared to men, women are more emotional. For this reason, women are more sensitive to whatever happens in their environment that disturbs their emotions. Women are more likely to have higher levels of trauma than men. While men have a higher level of thinking using logic than women, they also have a higher level of resilience than women.

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# Transformational leadership of student development to optimize student climate and organizational culture in the new normal education era

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**ABSTRACT:** This study aims to determine student coaches' transformational leadership style in optimizing students' climate and organizational culture in the era of the new average education. The research uses a qualitative approach, library data collection techniques, and the SLR-PRISMA analysis technique. The results shows that transformational leadership of student coaches during disruptive and competitive conditions will impact the climate and culture of student organizations in carrying out work programs and activities outside of academic activities.

## 1 INTRODUCTION

Leadership is something that has a significant impact on the running of an organization. House (Yukl 2006) defines leadership as an individual's ability to influence, motivate, and make others able to contribute to the effectiveness and success of the organization. Leadership is also related to a deliberate process of a person emphasizing his strong influence on others to guide, structure, and facilitate group activities and relationships in an organization (Yukl 2006). The person expected to carry out a leadership role is called the "leader." Other group members are often referred to as "followers," although in practice, some can assist the prominent leader in carrying out his leadership function. According to leadership theory, several approaches identify a leader, including characteristics, behavior, influencing processes, and situational (Yukl 2006).

Among the leadership styles that continue to be studied today is the transformational leadership style. According to Burns (Bass 1985), transformational leadership is a process in which a leader tries to motivate his subordinates to carry out higher responsibilities and increase members' awareness by using the appeal of higher values, morality, and ideals such as freedom, and justice, balance, development, peace, and humanity, not based on emotion alone. Baun Dalam (Papalexandris 2009) writes that this transformational leadership style has similarities with charismatic leadership styles and visionary leadership. These similarities can be seen in the leadership style's three general components: communicating the vision, using several ways to implement the idea, and showing a charismatic personality.

The efforts of transformational leaders influence subordinates in three ways: (1) encourage subordinates to be more aware of the importance of the results of a job, (2) encourage subordinates to place more importance on the organization than on individual interests, (3) activate the needs of subordinates at a higher level (Yukl 2006). Transformational leadership has advantages because it is closely related to increased productivity, performance, employee loyalty, organizational commitment, job satisfaction, and decreased turnover (Robbins 2003). Transformational leadership refers to changing the status quo by solving followers'

problems with the current system and attracting the new organization's vision. At the individual level, transformational leaders influence their constituents to make a shift from a focus on self-interest to a focus on the common good. Transformational leaders understand the need to build trust to create a solid commitment to mission-driven results. Influential transformational leaders use the leader's charisma and power to find and stimulate subordinates to trust and follow them as role models.

The implementation of the transformational leadership model in the field of education indeed needs to be applied by campus leaders such as the head of student associations, heads of departments, authorities of study programs, and student organizations coaches. This leadership model needs a solution to the leadership crisis, especially in education. Rush's opinion provides the basis for applying a transformational leadership approach. Moreover, this leadership model facilitates learning effectively and develops employee potential to the greatest extent possible by empowering workers, dividing authority by considering the creativity of workers based on trust, assisting workers in effectively solving strategic problems, and building self-confidence that can improve organizational performance by enhancing employee performance, etc. According to Harbin (2008), ten principles of transformational leadership must be considered when implementing transformational leadership: (1) The leader's vision is clear and communicated to subordinates; (2) A leader should enhance subordinates' awareness of the meaning and importance of their work tasks; (3) Leader should have an orientation toward achieving a shared vision; (4) Leader should have a pioneering nature of change; (5) Leader should have an urge of Continuous development of self-potential; (6) Leader should have an orientation toward achieving a shared vision; (7) Leader should also lead the occurrence of a learning process for subordinates; (8) Leader should also lead the occurrence of a process of empowering subordinates' potential and developing innovation and creativity; (9) A leader should improve the realization of a culture of cooperation within the organization, and (10) Leader should lead the creation of a conducive organizational work environment through partnership, multi-level communication, and respect for ethics and morality.

Leaders could be categorized into multiple types: Transformational leaders are leaders who can be said to be visionary; visionary leaders are empathetic and confident and often act as change agents; affiliate leaders are also sympathetic to the power of building relationships and managing conflict; democratic leaders motivate collaboration and teamwork and communicate effectively, particularly as excellent listeners; coaching leaders are emotionally self-aware, empathetic, and skilled at identifying and building on the potential of others. Thus, transformational leadership will positively impact subordinates, leaders, and organizations, particularly in today's conditions of ongoing globalization, where there have been numerous changes to the strategic environment of the organization, including dynamics, developments, complexity, and high levels of competition. The transformational leadership model is very appropriate to be applied in bureaucratic organizational environments, especially to solve various strategic problems the organization faces. Transformational leadership will help build a culture of cooperation, change corporate attitudes and behavior, improve organizational performance, and develop a more conducive organizational climate. Transformational leadership will ultimately enhance all organizational components' economic, social, work culture, and spiritual conditions (Kuswaeri 2016). Bass provides a transformational model, as shown in the Figure 1.

The characteristics of leadership will determine the success or failure of a leadership model in its application. In an organization, confident leadership may be successful or maybe the other way around. Therefore, it is necessary to have a leadership model with characteristics of the organizational culture. This leadership will drive all components of the organization. In addition to relocating, this leadership will also decide the organization's direction, ensuring its dynamics are constantly preserved. The administration held by a leader tries his best to find, explore, and try a leadership model that is deemed suitable by his organizational culture. Because this leadership approach will decide the organization's success, this study

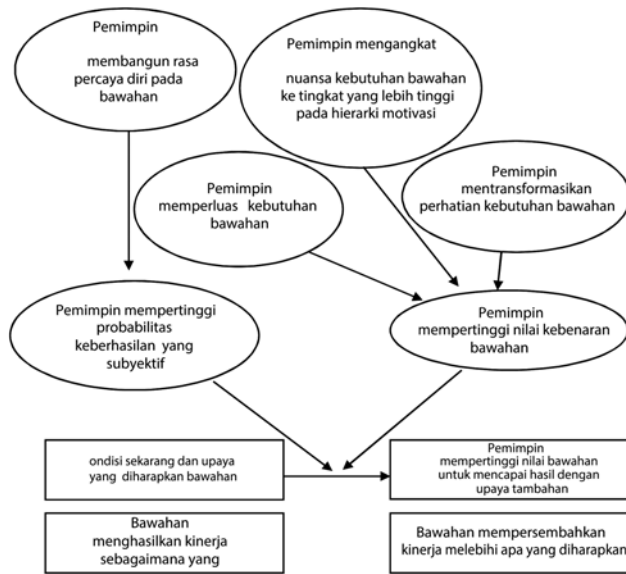


Figure 1. Transformational leadership model.

aims to determine student coaches' transformational leadership style in optimizing the climate and student organizational culture in the era of the new average education.

## 2 METHOD

The research uses the Systematic Literature Review method with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analysis) model from articles published from 2019 to 2022. The research model uses a scientific strategy focusing on overall and scientifically explicit questions through identification, selection, assessment, and summarising findings from similar or similar studies. A systematic review is a research activity that uses identification, evaluation, and interpretation techniques of research results by the research taken. Systematic reviews are included in secondary studies, and research aims to collect data from related research results so that the reality displayed becomes more exhaustive and equitable (Satria et al. 2018).

The following is the process of a qualitative approach with the PRISMA research design: In the first stage of the article search, it produced 40 articles from several sources, namely Google Scholar, Scopus, and Emerald. The second stage is screening where each piece is identified using the keywords "transformational leadership" and "optimization of organizational climate and culture." The limitation of the article's publication year is taken into account. The screening results show that 20 selected papers are on the research topic. According to Sugiyono (2013), this literature is a record of events that have passed in the form of writing, pictures, or monumental works of someone. This research does not require a data collection process in the field because the data needed is enough to collect literature data on research topics from books, journals, scientific articles, primary data, and other library materials. According to Zed (2004), in library research, the form of the reports carried out is to identify, examine, and compare the results of each journal article through the evaluation stage and then produce the author's opinion about the principal's strategy in improving the performance of education personnel.

### 3 RESULTS AND DISCUSSION

Based on the results of the screening using the SLR-PRISMA process, here are some results of studies based on articles relevant to the research topic of transformational leadership styles in student coaches and optimizing the climate and culture of student organizations.

Ahmad's research (2022) states that there is a partial influence of transformational leadership, intrinsic motivation on job satisfaction of the management of KOPMA UIN Raden Intan Lampung. Furthermore, the influence of Transformational leadership and intrinsic motivation simultaneously had a simultaneous effect on the Job Satisfaction of the management of KOPMA UIN Raden Intan Lampung. Meanwhile, from the Sharia Business Perspective, this can be viewed through Sharia values such as the natural view of Shidiq, Tabhliq, Amanah, and Fathonah. Transformational Leadership, Intrinsic Motivation, and Job Satisfaction by the management of KOPMA UIN Raden Intan Lampung can implement the perspectives of Shidiq and Amanah quite well. However, the nature of Tabliq and Fatanah still needs to be improved.

On the other hand, the study's results stated that the cooperation carried out by the institution's leadership with their subordinates in empowering the community was not optimal. It is because the collaboration that has been carried out so far only involves associates. There is no collaboration with the community that has yet to be maximized to be empowered and mobilized (Sari 2022). Other research by Yasmine (2022) indicates a partially positive influence of Job Placement on Employee Performance, a somewhat optimistic and significant influence of Organizational Citizenship Behavior on Employee Performance, and a partially positive and considerable influence of Transformational Leadership Style on Employee Performance.

Similar research results show that the transformational leadership style has a positive and partially significant effect on teachers' performance at S.M.K. Negeri 2 Kerinci. The Head of S.M.K. Negeri 2 Kerinci will be able to provide work supervision, incentives, and sanctions for teachers who violate the rules to make resulting performance good or even excellent (Krismon 2021). In line with this research, Rosyidah (2020) states that transformational leadership has a significant direct effect on the use of information technology, and there is no significant influence of leadership on student achievement through the use of information technology.

Rumours (2021), in his research study, stated that the role of lecturers in increasing student leadership potential could be seen in three ways: First, the existence of good terms on the part of lecturers; second, professors serve as motivators who consistently urge students to become leaders in intra- and extra-curricular organizations; third, professors transfer intellectual content.

On the other hand, Sahara (2019) states a positive and significant contribution between transformational leadership style and teacher work motivation at M.T.ss N 2 Medan. Another study found that the leadership pattern of boarding school supervisors in improving the quality of Santri at the DDI Lil-Banat Islamic Boarding School in Parepare City employs a transformational leadership pattern and coaching employs an approach pattern that is the starting point or perspective for students' learning process (Ramadhani 2020).

Subsequent research stated that transformational leaders are positively related to employee performance. Furthermore, inspirational motivation and individual considerations significantly impact employee performance (Top et al. 2020). In line with this, Li & Liu's (2020) research results show that the principal's transformational leadership is significantly and positively related to teacher leadership. Meanwhile, principal transformational leadership and teacher leadership were positively associated with teacher self-efficacy, but only teacher leadership was positively associated with student learning. Meanwhile, the results also showed that (a) the main underlying processes in which instructor-transformational leadership is related to students' academic performance and (b) the empirical examination of the three dimensions of student engagement (Balwant et al. 2019).

On the other hand, Suhana et al. (2019) stated that transformative leadership significantly affects knowledge sharing and innovative behavior. Knowledge sharing increasingly mediates the relationship between transformative leadership and creative behavior.

The transformational leadership style carried out by a leader will also be able to influence the performance and climate, and organizational culture in the institution he/she leads. It is in line with the results of research from Saputra et al. (2021) which showed that: 1) Leadership affects Professional Organizations, 2) culture influences professional organizations, and 3) organizational climate affects professional organizations. Other research states that there is a strong relationship between organizational climate and organizational commitment; this indicates that there is a positive correlation, meaning the higher the level of organizational climate, the higher the organizational commitment (Fernanda & Budiani 2019). On the other hand, Ardaniyati et al. (2019) stated that there was a significant influence between organizational culture and transformational leadership style on organizational commitment in student regiments.

Supriyanto (2019) states that 1) Budgeting funds for scientific activities, syncing student activities with academic activities, providing students with motivation and reinforcement, involving students in research and community service activities, organizing scientific writing training and preventing plagiarism, involving students in various scientific competition activities, and facilitating the formation of student academic societies are strategies for improving student literary culture.

Leadership is an essential issue for a group or institutional organization. It is because the leader is one of the most influential factors for the success of an organization or institution in achieving its goals. A leader can influence subordinates regarding the tasks that must be carried out. Leadership can also be interpreted as the power or ability to move and influence people. Education leadership is all activities to affect individuals in the educational environment in certain situations so that they go through cooperative efforts and are willing to work with full responsibility and sincerity to achieve the educational goals that have been set. Leaders in education, especially in universities, are called rectors. He has a vital role because he can influence, coordinate, guide, direct, and supervise all personnel in matters relating to the activities carried out to achieve effective and efficient educational goals. As a leader, the chancellor must encourage the enthusiasm and confidence of lecturers, staff, and students in carrying out their respective duties. Students also become agents who play a role in realizing the vision and mission of a university.

Effective change in higher education in the realm of structured and systematic change requires teamwork and good leadership. In addition to requiring serious and highly creative leaders, there are also developing models that need to be used to change higher education institutions, especially the State University of Surabaya, which will go to PTNBH (State Universities with Legal Body). Experts on leadership issues conclude that the behavior of leaders when influencing their members to carry out their work and other criteria is strongly influenced by unstable situations. Experts have widely recognized the importance of the case to significantly impact the leadership style a leader displays when affecting his members. The characteristics of leadership will determine the success or failure of a leadership model in its application. In an organization, specific leadership may be successful, and it may be the other way around. Therefore, it is necessary to have a leadership model with characteristics of the organizational culture. This leadership will drive all components of the organization. In addition to relocating, this leadership will also decide the organization's direction, ensuring its dynamics are constantly preserved. The administration held that a leader tries his best to find, explore, and try a leadership model that is deemed suitable by his organizational culture because this leadership model will determine the organization's success.

Students play an essential role in the development of the university. By realizing this, students should have a leadership spirit that can improve the quality of education. Students must have a vision and mission and transformative and quality-oriented management. The first characteristic of a transformational leader has a vision. Transformational leaders have a

clear idea and a holistic picture of how the organization will be when its goals and objectives have been achieved. It confirms that transformational leaders base themselves on ideals for the future, regardless of their visionary attitude, because everyone recognizes it as a great and fundamental vision. A transformational leader views organizational values as noble values that must be designed and established by all staff to have a sense of ownership and commitment to their implementation. Sergiovani argues that the symbolic meaning of a transformational leader's actions is more important than the actual actions. One of the requirements to become a transformational leader is strong confidence in leading. When the leader looks confident, subordinates will be more determined and sure to follow the leader.

Transformational leadership is a process in which "leaders and followers raise each other to a higher level of morality and motivate." A leader is someone aware of the principles of organizational development and human performance. He/she seeks to develop his/her leadership aspect by motivating staff and calling for higher ideals and moral values, such as independence, justice, and humanity, not based on emotions such as greed, jealousy, or hatred. Transformational leaders are agents of change and act as catalysts, that is, those who change the system for the better future. Catalyst is another name for transformational leaders because they play a role in improving all existing human resources. They try to give reactions that generate enthusiasm and work as quickly as possible, appearing as pioneers and bringers of change.

#### 4 CONCLUSION

The transformational leadership of student coaches amid disruptive and competitive conditions will impact the student organization's climate and culture in carrying out work programs and outside of academic activities. The results of the study also stated that the collaboration carried out by institutional leaders and their subordinates in empowering the community was not optimal. Students play an essential role in the development of the university. By realizing this, students should have a leadership spirit that can improve the quality of education. Students must have a vision and mission and transformative and quality-oriented management.

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# The prevalence of emotional disturbance in young children during online learning in the COVID-19 pandemic

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**ABSTRACT:** The present paper explores the prevalence of emotional disturbances due to online learning during the Covid-19 pandemic. During this pandemic, school activities were carried out at home, such as online learning, in which children were disconnected from friends and teachers, and they had to adjust to a new lifestyle with the transition from offline to online learning. In this study, 100 parents participated and were selected using purposive sampling as the eligibility criteria determined. Data were analyzed using descriptive statistics and regression analysis. It is revealed that online learning has contributed to emotional disturbance in young children. Meanwhile, this current study implicates children's emotional development in the school curriculum setting or during online learning.

## 1 INTRODUCTION

In March 2020, most educational institutions worldwide canceled in-person instruction and moved to remote learning and teaching to contain the spread of COVID-19. Although adopting distance learning is key to ensuring the continuity of education following the physical closure of schools, students are, on average, likely to experience a learning loss during the lockdown. It happens in Indonesia, where learning activities have transformed from offline to online instruction. The switch from offline to online learning caused by COVID-19 is likely to negatively affect those children in Kindergarten who have more severe difficulties adapting to the new learning environment (Yeasmin et al. 2020). The switch is also expected to exacerbate existing educational inequalities. More vulnerable students, such as, for instance, those from less advantaged backgrounds, are especially likely to fall behind during this emergency period. These students are less likely to have access to relevant learning digital resources (e.g., laptop/computer and broadband internet connection) and less likely to have a suitable home learning environment (e.g., a quiet place to study or their desk).

Mental health problems often debut in early childhood and may last throughout adulthood, making early detection and intervention especially important. A child's development and functioning can be defined as time-related changes resulting from biological, contextual, and environmental conditions (Vacaru et al. 2018). The core of the developmental process is transformation; something new appears (Greene et al. 2019; Horner 2020; Leach et al. 2021; Pfeiffer 2021). Thus, as the simple becomes complex or an essential skill becomes advanced, it impacts the development of children, whether regular or abnormal, typical or atypical,

where the division is complex. This, in turn, can affect the child's everyday functioning (e.g., getting dressed, playing, interacting with peers, etc.) (Andersson et al. 2016). Emotional development in childhood is the foundation for determining aggressivity in the future. In early childhood, emotional involvement plays a crucial role in learning activities. It will activate the nerves of the child's brain to master learning material more effectively. A mental disorder might occur in childhood, namely emotional disturbance (Vacaru et al. 2018).

Children with this disorder have complex characteristics. The behavioral characteristics are often carried out by other children of the same age, such as moving a lot, disturbing playmates, fighting, and sometimes solitary behavior. Children with emotional disturbance can be found in various children's communities, such as playgroups, elementary schools, and play environments. In this early-stage term, disturbance might be more suited before an increase in the disorder behaviors. Therefore, this study refers to disturbance behavior than a disorder to examine the negative behavior that appears in young children (Center for Behavioral Health Statistics and Quality 2016).

Emotional disturbances in children can occur anytime and anywhere. For example, during this pandemic, all school activities are carried out at home, including teaching and learning activities, known as online learning. There is no online, face-to-face learning between teachers and students. In this case, it is likely to make children experience changes, such as emotional changes, because they have to be at home alone, unable to meet teachers and friends. These adversely impact children's mental health and welfare, leading to various mental health issues, such as anxiety, stress, depression, and sleeping difficulties (Asimakopoulou 2015). Moreover, evidence shows that children experience psychosocial disorders such as insubordination, aggression, and selfishness. Meanwhile, psycho-emotional disorders occur in children, such as shyness and excessive emotions (Scheper 2016).

In Indonesia, The Indonesian Commissioner for Children Security conveyed that 79% of young children experienced difficulties in online learning during the COVID-19 pandemic. It negatively impacts children's well-being by interrupting their health care, security, education, and overall mental health (Prosen et al. 2019). Recently, no literature has been available in Indonesia on the long-term impact of the COVID-19 pandemic on children's mental and post-pandemic health (Belitski et al. 2022). Thus, it becomes crucial to determine how extended school closures, online learning, online task, and the pandemic have impacts on children's emotional well-being. Therefore, this recent study explored young children's emotional disturbance from online learning during the COVID-19 pandemic and its influence on the emotion of children. At the same time, the following restriction policy was implemented, such as the closure of educational institutions and a stay-at-home recommendation.

## 2 METHOD

### 2.1 *Participants*

During the pandemic, we decided to recruit participants thru the online platform. The participants were 100 parents who have early childhood (4–6 years old) in Surabaya district, Indonesia. Participants have been obtained from the online platform using Facebook and Whatsapp groups since the beginning of 2020. The sampling technique used in this study was non-probability sampling called purposive sampling. This technique is sampling based on their online answer completion. The participatory invitation was delivered to 280,316 users of those social media. However, 135 completed the whole study, with only 100 parents given as a result of completion as consideration by the researcher to fit the excellent data validation without outliers and other possible errors. This participation was entirely voluntary.

## 2.2 Measurement

In order to measure the variable, children's emotional questionnaire and parents' perception of online learning has been questioned by the 31-item measure processed into google form using a 5-Likert scale to classify the scores. Before being distributed to the participants, the instrument grid has been approved for internal validity, such as expert judgment. Regardless of the procedure to fill out the form, first, participants clicked on the advertisement and were redirected to connect with the google form. Second, participants completed an online informed consent form. The questionnaire was divided into three sections: demographic information, the statement associated with an emotional disturbance of young children, and the statement associated with the perception of online learning. The present research is focused on the sections of the questionnaire related to the associated emotional disturbance of young children.

## 2.3 Data analysis

The questionnaire is intended for parents of early childhood who are doing online learning. The percentage of participants who provided each response (Always-Never) to the closed questions was calculated. For each of the questions, responses were scored into categories. Descriptive statistical analysis was used to explore the mean score. Moreover, regression analysis was used to examine the influence of online learning activities on young children's emotional disturbance.

## 3 RESULTS AND DISCUSSION

As shown in Table 1, participants were diverse in terms of gender, age, and educational level. The most significant parent proportion of the participants was female, aged 38 and 32 years old; however, children aged between 5 and 7 years old. Results showed that young children experienced a change in emotional behavior. The recent research revealed the effect of online learning on children's emotions using statistical tools to analyze the data using regression model analysis and descriptive statistics through the description of the Mean score. In the following sections, results from each of the topics are presented.

Table 1. Characteristics of the participants (n = 100).

Characteristic	Category	Percentage
Parent's Gender	Male	35
	Female	65
Parent's Age	18-25	8
	26-35	17
	36-45	65
	46-60	10
Parent's Educational Background	Junior High School and lower	13
	Senior High School/Diploma	53
	Undergraduate and higher	34
Children's Age	Four years old	21
	Five years old	32
	Six years old	13
	Seven years old	34
Children's Gender	Boy	62
	Girl	38

### 3.1 Emotional prevalence during online learning

Parents who have early childhood with the current condition of doing online learning get complete data with a description of the respondents based on the respondent's gender that boys ( $M = 15.3$ ) are slightly more resilient than girls ( $M = 13.6$ ) in emotional disturbance. Based on the children's online learning conditions, they recently found that the dimension of getting an assignment has a more excellent mean score than others ( $M = 3.18$ ). However, children who work alone have a lower mean score ( $M = 2.60$ ). It revealed that school gives an assignment to children on an online learning platform, and few of them do it by themselves. This evidence led to the consideration that parents were involved in their assignment.

In the case of the emotional prevalence of children during the online learning transition, anger dominated the dimensions ( $M = 2.46$ ). Children were angry when there was a signal or network interference during online learning. Otherwise, disobedient and aggressive emotions of have the least mean score ( $M = 1.81$ ). In online learning, children experience emotional disturbance when they disengage from the internet connection—several psychosocial disorders, such as insubordination, aggression, and selfishness. Meanwhile, psych-emotional disorders that occur in children, such as shyness and excessive emotions, might not be mentioned. For some of these disorders, the solution treatment required parents to address the matter that, according to research, this was to redirect a child with play activities, give good advice from parents and teachers, exemplary methods, and make playgroup activities available.

### 3.2 Prediction of online learning activates children's emotional behavior

The regression analysis was used to predict how online learning activities have contributed to children's emotional behavior. Table 2 shows the significant result.

Table 2. Prediction on emotional disturbance.

Variable	<i>F</i>	<i>p</i>	<i>R</i> <sup>2</sup>
Online Learning Activities*Children's Emotional Disturbance	3.48	.03	.22

The online learning activities showed a significant contribution to children's emotional behavior ( $p = .03$ ). It could be implied that the emotional behavior of young children was approximately 22 percent received influences from those online activities. The standard internet use period was 35 minutes for early childhood. In some cases, the teacher is allowed to add 10–15 minutes more if there is a technical problem or the children are working on an assignment. During the pandemic, automatically, the education system has a transformation to be adjusted to online learning. Parents and teachers have to collaborate in this case in order to create a suitable environment for children.

In some cases, misbehavior in children is reported due to the interaction, and parents or teachers need to adapt to it. Jiao et al. (2020) revealed that fear, anxiety, and other emotions were higher in children living in areas with high epidemics. Steps for parents and families in overcoming fears were playing collaborative games, playing music and singing, and paying more attention to children. Several psychosocial symptoms could be a concern for children surrounding people, such as insubordination, aggression, and selfishness. For some of these disorders, the solution treatment was done to address the matter that, according to research, this was to redirect a child with play activities, give good advice from parents and teachers, exemplary methods, and make playgroup activities after its end. The results showed that children in Surabaya, Indonesia, frequently reported experiencing emotional disturbance due to online learning during the COVID-19 pandemic. Children experienced an emotional

disturbance manifested by anger, aggressivity, and rebellion. Disturbance behaviors such as anger related to the signal or network interference during online learning were identified as the most potential behavior to be aggressive (S. Coyne et al. 2011; S. M. Coyne et al. 2011). It suggested that implementing actions to help children find well-being in their daily activities was necessary. Similarly, boys seemed to have more resilience than girls when triggered by network issues during online learning.

In addition, the impact of online learning measures children's emotional behavior, which is, 22 percent's online learning itself has a role in young children's emotional disturbance; however, boys have greater resilience than girls. This may be particularly relevant among parents with low educational levels, most of the parents in Surabaya. They were with senior high School education. Parents stated that they were spending more time with their children, which in some cases implied that one of the parents was unable to work. Most participants reported positive effects of the increased time together, such as an improved familiar bond and more communication between family members. However, other participants reported difficulties coping with their children's mood and emotional behavior and more frequent arguments and fights. This points toward a potential surge in domestic violence. In this sense, research conducted during the COVID-19 pandemic impacts the lives and education of young children in the context of how to support them within the education system. Support to families seems necessary as part of the response learned during COVID-19. In the context of COVID-19, a rise of cases of domestic violence following in the wake of high-profile cases of child abuse and neglect, concerns have been raised about the effectiveness of multi-agency responses to children living with abuse has been reported in e UK (Chebbi et al. 2020; Lloyd 2018). Results from the present work provide the support that parents with a low educational level tend to argue with their children (Hahnefeld 2020; Lloyd 2018). The policy on online learning during the COVID-19 outbreak is that the learning process might be considered the length of hours, number of assignments, and accessibility of the network. Online learning difficulties were identified as one of the best triggers for the effects of emotional disturbance during the COVID-19 pandemic (Ares et al. 2021).

### *3.3 Implications for family bonding and young children's emotional resilience*

Results from the present work suggest that schools should be compensated for the online activities of young children, such as the duration of online learning and the number of assignments. The capacity of learning activities should be an essential component of the governmental response policy. Emphasis should be placed on family mental health who accompany their children during online learning. Second, the psychological effects of online learning during the COVID-19 pandemic measures deserve special attention. Practical emotional regulation methods, such as family yoga and meditation, should officially keep a balance in mental health to engage in preventive measures and elicit excessive anger and aggressivity. Hopeful messages in practical action could reduce the uncertainty and negative emotion elicited during the pandemic. Effective mitigation strategies should be implemented both during social distancing and once it has finished. Practical recommendations for coping with boredom and isolation could have a positive effect (Brooks et al. 2020).

### *3.4 Implications for family bonding and young children's emotional resilience*

Eventually, the present study suggested that children's resilience promotion programs should focus on parental support. The study indicated the mediating role of self-esteem in the relationship between parents-child relationship, support and conflict, and resilience. It is also essential for adolescents to boost self-esteem through training, cultivation, development, and promotion (Tian et al. 2018). Parenting behavior is one mechanism that links children's well-being. On average, parents with a low educational level provide less emotional support for their children, are less involved in their children's lives, are more erratic in their use of

discipline, and monitor their children less. Parenting quality is significantly related to conduct in childhood and is predictive of academic conduct and social competence in adulthood (Ares et al. 2021). This suggests that with interventions that aim to boost emotional resilience and family bonding, there could benefit from programs that aim to improve coping skills and mental health.

#### 4 CONCLUSION

Online learning was a triggered measure of the emotional disturbance of young children during the COVID-19 outbreak in Indonesia. It caused a significant disruption in school activities and family well-being, primarily attributed to changes in study-related activities and the closure of educational institutions. Difficulties in coping with such changes and the anger uncertainty caused by online activities during COVID-19 were identified. Parents from low educational backgrounds faced more difficulties coping with the consequences of their children's emotional disturbance measures, both from an educational and emotional perspective. These results provide relevant insights for school policy and practice by highlighting the importance of giving emotional and psychological support to children and families during online activities during the COVID-19 Outbreaks, which can be helpful in the design of parental program interventions focus on parental support and self-esteem, particularly the improvement of parental support in a family context.

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# Knowledge mapping on political cynicism: A bibliometric analysis in politic education

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**ABSTRACT:** The report aimed to investigate the scientific landscape of political cynicism in the Scopus database. A total of 730 research articles released between 1956 and 2022 were retrieved and reviewed. Bibliometric network analysis with VOSviewer was performed to create co-occurrence and co-authorship mappings. There are 4 research clusters related to democratic activities, human differences, and the media, which indicate a new trend after 2012. This report provides a complementary research review approach to receive a comprehensive view of what researchers have done. A future review of the impact of political cynicism and online and offline media types is suggested for making the review.

## 1 INTRODUCTION

In political education, political cynicism is one form of social expression that political science students and researchers should understand. Political cynicism often occurs in democratic countries because people can express themselves freely within the fundamental laws. However, political cynicism is considered detrimental to fundamental democracy because it will cause decreasing electoral and political involvement and obstruct core democratic processes. Political cynicism poses a threat on several levels, including admiration and personal level (McKay & Tenove 2021).

Today, political cynicism appears in public much higher than in the past. Effective mass media is essential for people to access information much more easily than before. Thus, people often encounter political cynicism through the media in many forms, with and without awareness. Some media critics and observers say that the media with political cynicism always focuses on the game and tactics of politics rather than social issues and solutions. Interestingly, when the audience of the media receives a lot of information in this cynical way, the audience will also have negative thoughts and misbehaviors in politics (Capella & Jamieson 1996; De Vreese & Elenbaas 2008).

In addition, political cynicism can be categorized as bullying behavior (Boonroungrut & Huang 2018; Boonroungrut & Oo 2017). Political cynic behavior arises from political variables, such as dishonesty, immorality, being untrustworthy, selfish, incompetent, and not attractive to the public (Pattyn et al. 2002). The situation of political cynicism currently happens in many countries, including Thailand. Political cynicism arises between the people and the government, and it also happens to people with different political views.



For the reasons mentioned above, this has caused a significant increase in interest in political cynicism among researchers worldwide. This study aims to review the literature on political cynicism using bibliometric network analysis. This method assists the researcher in determining which information has already existed in the database and the current research trend. Furthermore, using this analyzing method to review research articles can provide readers with an overview of many documents available, allowing them to grasp better what the researchers have done or what is lacking in our literacy. This method is widely used in a variety of fields of study in both art and science (Boonroungrut et al. 2022).

## 2 METHOD

### 2.1 Data sample

The samples were obtained from the Scopus database from January 1, 1956, to May 15, 2022, totaling 66 years in the Scopus collection. The search term was “Political cynicism,” which was explicit in article titles, abstracts, and keywords. The sample search was limited to English and journal or conference proceeding publications. They were published most in the Social Sciences (approximately 56.10% of all records) and Arts and Humanities areas (19.40%), following the psychology area (7.80%). The samples were most published in 2021, as shown in Figure 1. Those sample records were downloaded as a CVS file. Silpakorn University digital resources were used to connect and access records from the Scopus database. Notably, even if this study included records from 1956, the first record that explicitly used the word “political cynicism” in the article title was in 1961, namely Political cynicism: Measurement and meaning.

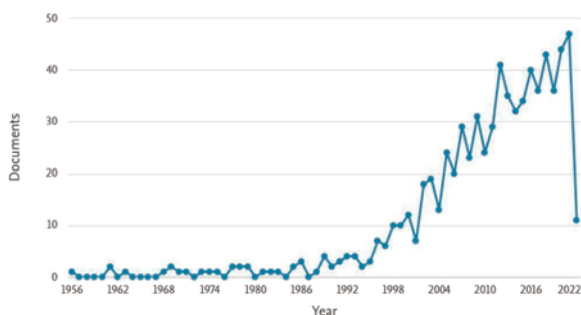


Figure 1. Publication year from 1956 to 2022 (May 15).

### 2.2 Analytical method

Bibliometric analysis was used to illustrate the data, which included co-occurrence analysis and co-authorship. The analysis was performed using VOSviewer software (version 1.6.18) with all default normalization settings. (For further information on how VOSviewer calculates terms, check out Van Eck and Waltman (2010)’s work and the website [www.vosviewer.com](http://www.vosviewer.com)). Bibliometric studies do not require ethical approval.

## 3 FINDINGS

There were 730 records found in the data. They were cited in 11,360 documents. The average citation was 15.56 citations per article. Overall, publication growth increased at a polynomial quadratic rate ( $r^2 = .86, p.05$ ). Notably, the research publication number has reached over 10 articles per year since 1998 and has been steadily increasing.

### 3.1 Knowledge clustering

In the co-occurrence mapping, there were 2,122 different terms used by researchers worldwide. This study set the minimum number of occurrences of a term at 5, and the resultant 76 thresholds were met. The term “political cynicism” was not removed to visualize the linkage among those clusters better. The top 5 terms with the highest total link strength were human (occurrence = 25, link strength = 126), article (occurrence = 21, link strength = 106), politics (occurrence = 33, link strength = 86), female (occurrence = 10, link strength = 74), and male (occurrence = 9, relevance = 66).

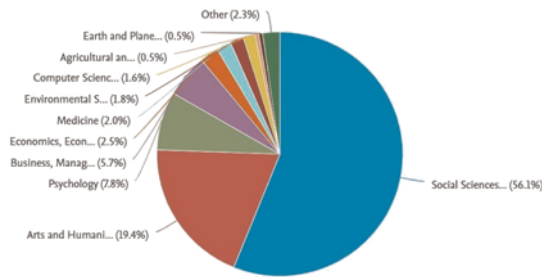


Figure 2. Research area.

Figure 2 depicts the authors’ co-occurrence term mapping, which revealed four distinct clusters. The bottom of the map has a red cluster (n = 24) with terms like democracy, election, corruption, colonialism, political system, voting behavior, and civil society. In comparison to the other clusters, it was the largest. Terms connected to media were found in the light green cluster (n = 23) on the right, including fake news, the internet, disinformation, media effects, and terms relating to political communication, effects, attitudes, and trust, as well as postmodernism. The top right blue cluster (n = 15) appeared to be associated with psychological and human difference approaches, with terms such as male, female, personality, religion, emotions, and psychology. The yellow cluster (n = 13) at the center of the cluster is related to world situations and present policies such as climate change, education, elections, human rights, populism, and youth.

As presented in Figure 3, the most recent terms were primarily found in the red, green, and yellow clusters in Figure 3. The green clusters had the most recent terms connected to the

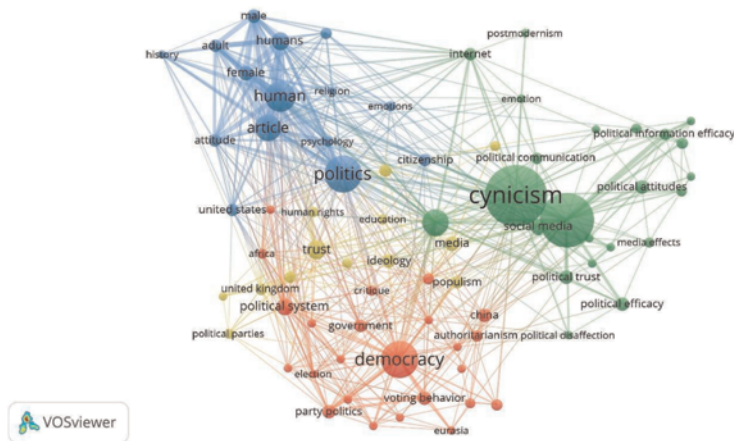


Figure 3. Co-occurrence mapping.

media, such as social media, media effect, and political communication. The yellow cluster's main terms include trust, ideology, and human rights. Another group includes the most recent terminology, such as populism. Lastly, since 2016, scholarly interest in political cynicism and the media has been identified as a current trend.

### 3.2 Active co-authorship

1,152 authors and co-authors have contributed to works about political cynicism. When the minimal number of papers for an author was set to 3, 36, the thresholds were found. Table 1 lists the top ten most productive authors. De vreeze, C. H. from the University of Amsterdam's Amsterdam School of Communication Research (ASCoR), was the most productive author who focused on media and politics. He is ranked ninth, and his main collaborator is Boomgaarden, H. G., who is ranked tenth. He received 135 citations. The main research clusters were the De vreeze, C. H., Van Hiel, A., and McKiney, M. S. groups, but they were not linked to each other. The most extensive set of related items consists of 6 items by De vreeze, C. H., and Van Praag, P. The co-authorship mapping declared a non-small world effect in which all terms in the network were not connected, as shown in Figure 4.

Table 1. List of top active authors.

No.	Authors	Occurrences	Citations	Link Strength
1	De vreeze, C. H.	13	666	5
2	Pinkleton, K. D.	7	467	5
3	Sweetser, K. D.	5	199	0
4	Swami, V.	5	646	4
5	Austin, E. W.	5	397	5
6	Van Praag, P.	5	336	7
7	Van Hiel, A.	5	65	11
8	Kaid, L. L.	4	201	0
9	Boomgaarden, H. G.	4	135	2
10	Schuck, A. R. T.	4	107	3

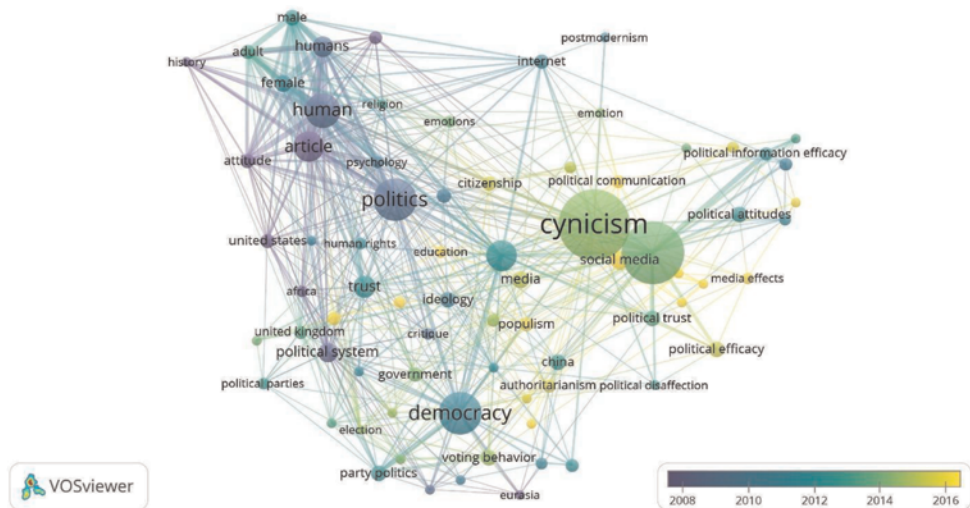


Figure 4. Publication year overlay mapping.

## 4 DISCUSSION

This study was to explore an overview of the world literature related to political cynicism on the Scopus database, published from January 1, 1956, until May 15, 2022. The Scopus database was chosen because it is the most extensive social science index database. It was found that the number of articles about political cynicism is growing each year. De Vreese, C. H., an author from the Netherlands, has the most publications and citations. The note from co-authorship mapping showed that the absence of small-world collaboration among researchers worldwide still exists in this field.

From the samples in the search method limited to English and journals or conference papers for the term “Political Cynicism,” it found 730 records most published in the social sciences (56%), arts and humanities (19.40%), psychology (7.80%), and business (5.70). However, the Scopus database research revealed several related term clusters but identified a gap that can be developed for future research. The most relevant term is the “Media” cluster, which includes terms such as “social media,” “media effect,” and “political communication,” which have been the most commonly found in databases since 2012. Significantly, authors have published articles on the subject every year, presenting various aspects of the relationship between political cynicism and the media. This point can continue to be the research trend, in line with Newman et al., who agreed that the world’s population is facing a

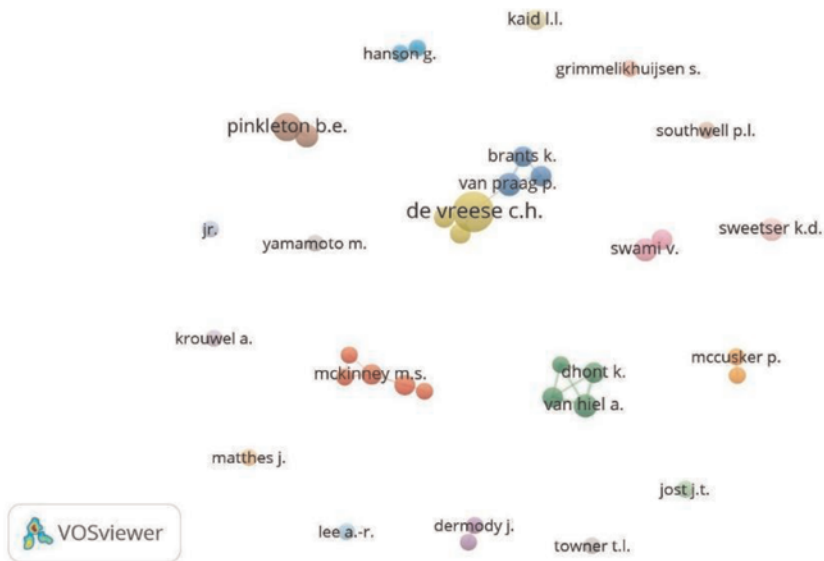


Figure 5. Co-authorship.

massive shift in political information intake through social networks (Newman et al. 2018). This phenomenon leads many researchers worldwide to pay more attention to the relationship between political cynicism and the media. Jebril et al. (2013) said a country’s characteristics could influence political cynicism. Future research into the relationship between different media systems and political cynicism would be intriguing (Jebril et al. 2013).

Political cynicism often appears in the literature related to the democratic system. Several terms, such as election, government, and voting behavior, have appeared in the Democracy cluster. It can be prevalent in democratic forms of politics. For example, some researchers discovered important news’s detrimental effect on younger voters’ political cynicism

(Adriaansen et al. 2010). Political cynicism is also related to people's education. It was found that negative correlations could occur in political talk and friendship situations (Agger et al. 1961).

In sum, one main limitation is that the report includes only those articles in English that appear in the Scopus database. Reports published in other local languages were not included. As presented in the study, political cynicism in political education still has a knowledge gap. Notably, political cynicism receives multiple views from researchers in different fields of knowledge, not only from researchers in political sciences. The previous research presented in the studied mappings confirmed their strong correlations. Thus, it could be explored and researched in various fields in recent years.

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# Teacher shortages requiring collaborative efforts on challenging COVID-19

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**ABSTRACT:** A coordinated effort and a united front are required in challenging times. Global responses to the recent COVID-19 pandemic highlighted the importance of WHO leadership, health systems-level responses, and responsive citizens. We also noted that the pandemic widened pre-existing opportunity and achievement gaps, impacting historically disadvantaged students and regions hardest. These key components are helpful for governments as they prepare for the current teacher-shortage pandemic. However, there is no equivalent to WHO for global educational leadership. Education systems are burdened and disparate, the media has systematically devalued the role of teachers in society and inequities continue to widen. We review the current teacher shortage, reveal common principles and practices, and highlight collaborative efforts and successful practices. We offer recommendations based on learnings of how we successfully responded to the COVID-19 pandemic but also highlighted the need to address current inequities. Recommendations for our response to the current global teacher shortage are underpinned by the importance of leadership, system-level responses, citizen responses, and equity.

## 1 INTRODUCTION

COVID-19 has been a significant disruption to the education system around the globe. It required the health sector to respond rapidly and systematically address its unpredictable and unprecedented impact. Countries united globally in their response to the pandemic, but many implemented significantly different policies, processes, and practices with varying results. As COVID-19 continues to impact our lives, including the schooling sector, governments should reflect and review their global responses with a critical lens and adjust their approaches accordingly in preparation for any future pandemic. We need to learn from our recent collaborative endeavors. At a government level, a commitment to the health and well-being of the community and its societal needs is essential. We must draw from global successes and identify the best practice responses to the pandemic to inform future practices.

Unfortunately, another pandemic is sweeping the globe; although not as deadly as COVID-19, it has the potential to be equally as impactful on communities. We are currently in the middle of a massive global teacher shortage. The teacher shortage may threaten the stability of our communities and the profession itself, mainly coming from the impact of COVID-19 on schools. Schools and teachers play a significant role in our society. They were first responders in schools during COVID-19 and were acknowledged for their efforts to ensure students were supported and remained engaged in their learning during COVID-19

(Heffernan 2021). Whether safe havens or problematic, schools unite communities, and celebrating successes, they are often the first responders to personal, local, and global incidences and dilemmas. Schools are not only a place of learning but also provide a context where friendships are formed, and citizenship is developed. In short, schools are responsible for preparing children to become active, engaged, and informed future citizens.

Teacher shortages can disrupt our schooling system and, in turn, disrupt the future of our young children. The OECD predicts that the profession will be one million teachers understaffed in 2023. This global shortage is forcing countries to review current practices and explore alternative options for Initial Teacher Education (ITE) providers. Many fast-track, paraprofessional, and innovative approaches have been trialed to mitigate the shortage (cite). However, these quick responses may have long-term implications for the profession. They could deteriorate the quality of our programs and professionals credibility of the teaching profession, which is already under constant scrutiny and attack (Mockler 2022).

We cannot afford to respond to the current pandemic in ways that will further impact the learning of our students or the credibility of our profession (Watterson 2022). We need to ask ourselves: what other profession would contemplate sending unqualified personnel into the workforce, particularly if it impacts the learning of our most precious resource, that is, our children?

This paper reveals the extent of the global teacher shortage. It reflects on the lessons learned from our global response to COVID-19 and explores how we can apply this knowledge to our response to the current pandemic, namely teacher shortage. It will amplify the common principles needed across all jurisdictions and highlight the importance of collaborative and creative efforts to resolve the current shortage. A range of positive and practical solutions will be identified across the countries that successfully address the shortage and will provide recommendations for future policy and practice.

## 2 TEACHER SHORTAGES AROUND THE GLOBE

The global teacher shortage is evident within and across nations. UNESCO data below highlights the total number of teachers needed between 2020 and 2030 (Figure 1). Secondary teachers are the people of greatest need, with a global shortage of Math and Science evident across the nations, particularly in Indonesia and Australia.

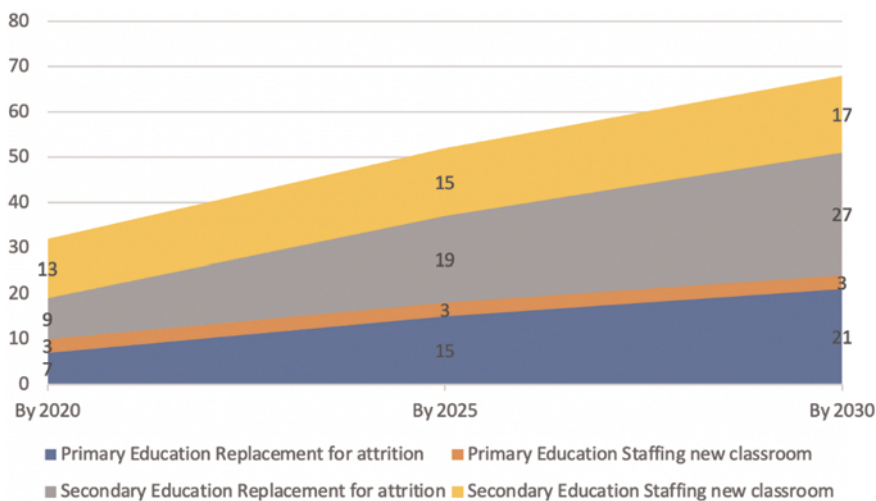


Figure 1. Number of teachers needed globally (in millions) UNESCO.

UNESCO data highlights the extent of the current teacher shortage, revealing the number of countries impacted by the teacher pandemic over the next decade (Figure 2).

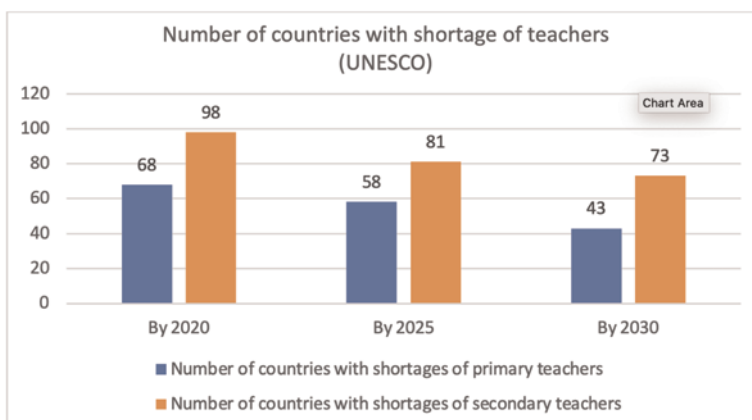


Figure 2. Teacher shortages around the globe.

The top 10 countries showing an imbalance ratio between teachers and students are located in Africa. The top states with major shortages in America include California, Nevada, Washington, Washington DC, Indiana, and Arizona. China, Japan, Vietnam, and South Korea are also showing shortages. In addition, the international school system, now the size of the Australian school system, with 10,000 schools globally and teaching over 5 million students, is also experiencing teacher shortages (ISC 2019).

### 3 COMMON PRINCIPLES & PRACTICES

*At the start of the COVID-19 pandemic, it was time to act and apply guidelines. Almost a year later, the goal is to define an ethical vision capable of bringing countries together while considering their specific characteristics. Now is the time to call into question the subsidiarity of health worldwide to arrive at useful functional coexistences between systems based on different standards and cultural values (Stoekle et al. 2021).*

Although countries responded to Covid-19 differently, there were some commonalities within the different approaches. The core principles and practices employed globally to mitigate the impact of Covid-19 involved enforced isolation and social distancing, wearing masks, improved hygiene, particularly washing hands, vaccinations, and anti-viral medication. Each country recognized the importance of these core principles and practices and modified and adjusted them to suit their contexts. This resulted in significant differences regarding death rates, reporting, and operational endeavors across the nations. However, the core principles and practices remained, and governments, institutes, and organizations were implemented accordingly. The World Health Organisation and their national counterparts led the global response to the pandemic.

Although not new or predicted, no common approach to the educational pandemic has been actioned. Nevertheless, who is leading the global teacher shortage? What global principles inform the enactment of current teacher shortage responses? Much of what is



being actioned relates to the legislative structure of the country rather than a globally informed process. For example, individual states in Australia are making decisions, whereas, in Indonesia, it is a national directive. In Australia, recent ministerial inquiries have taken place, and interested parties submit ideas to the panel for reference and consideration.

However, each state and the local area has had to respond to the current teacher shortage without waiting for national or international guidelines. Policies have been changed, practices have been enacted, and people and places have been impacted. Similarly, COVID-19 disparities and entrenched disadvantage can be seen, particularly in areas of greatest need, rural and remote, and hard-to-staff schools.

Each policy change or initiative results in a ripple effect of impact on all segments of the educational sector—recruitment into teaching, initial teacher education programs, professional practicum experiences, transition into the workforce, pressure on current schools and teachers, a need for more casual staff, limited opportunity for professional development, ongoing areas of need and shortage.

The raised awareness of the increased workload and burden on teachers and schools driven by an obsession with bureaucratic measurement regime, coupled with the systematic devaluing of the sector by the media and government (see Mockler 2022), has resulted in fewer people applying to be teachers. More teachers are leaving their profession and more instances of violence against teachers and principals by students and parents are noticed. The lack of support and pathways further compounds this into and through the profession, where induction is sporadic, professional development is rare, and promotion is burdensome. Our brightest students are being turned off the profession because of these interconnected elements.

A teacher drought map can be constructed in most countries and characterized by geographical or subject-based drought areas. Rural, regional and remote schools, and ‘hard-to-staff schools’ continue to be short of teachers. Math, Science, Technologies, and ESL remain short of qualified teachers, with many teaching outside of their field (TooF).

The core principles arising from the current teacher shortage relate to raising the status of the profession; reducing the burden on the profession; catering to differences—location, subject areas, phases of learning; retaining students in ITE programs and teachers in schools; and more importantly, ensuring that we meet the demands of our students within our schools in terms of inspiring an affection toward learning irrespective of their zone or area. The health and well-being of our teaching profession require a commitment to the health and well-being of everyone involved; that is, students, teachers, and principals.

#### 4 GLOBAL COLLABORATIVE RESPONSES TO TEACHER SHORTAGES

During COVID-19, isolation was enforced, masks were worn, washing hands was encouraged, and vaccinations were recommended. Citizens around the globe responded to local, state, and national mandates and collectively contributed to the success of the endeavors. The education sector was particularly disrupted, but the global response from educators was phenomenal. Systems and educators responded quickly and responsibly with a massive uplift in technological skills across the profession and hybrid approaches delivered to keep children engaged (Dorn et al. 2021; Gore et al. 2021). However, there were considerable differences in how each country implemented policy and practices, with the most striking difference being the discrepancies in access, equity, and support. During COVID-19, we saw the socio-economic gap widen. We witnessed wealthy countries storing vaccines while poorer countries went without vaccinations. We saw unsanitary conditions in refugee camps and orphanages. We saw countries financially support their workforce while others could not. We saw many countries unable to establish a systemic or sustainable program to stop the impact or report cases. With the ethical tension between health and economics, individuals

and communities require the embodiment of practical ethics to mediate these tensions (Stoekle et al. 2021).

We must ensure that the discrepancies in access, equity, and support for our most vulnerable, marginalized, and geographically isolated are not replicated in our response to the teacher shortage between or within countries.

## 5 SUCCESSFUL PRACTICES

Although we note there are multi-faceted issues impacting the teacher shortage, such as the status of the profession, the burden on teachers and schools, the increased violence toward teachers and principals, the retention of student teachers and teachers in schools, the quality of professional development and the lack of ‘whole of the profession’ approach to our endeavors, and limited success possibly based on a lack of desire to address, the more extensive societal aspects have occurred. However, successful practices have centered on recruiting and retaining staff; financial incentives to entice people into the workforce is a typical response: reduced living.

There are a few solutions and successful practices that we can highlight. For example, in Australia, Legislative guidelines regulate professional experience in initial teacher education undergraduates are expected to undertake 80 days of practicum, while post-grads require 60 days. Many of them attend the transition between ITE and schools. Many universities trialed successful internship models such as W.A. Combined Universities Training Schools (WACUTS), Murdoch Internship Model, LaTrobe’s NEXUS program, Teach for Australia, and other internship models which have been highly successful. These models stemmed from the 2009–2011 national quality teacher reform, which triggered TEMAG recommendations and saw the introduction of a national curriculum, national standards for teachers and principals, teacher registration, and initial teacher education accreditation.

In Indonesia, the government systematically upskilled the teaching workforce by providing a learning and sharing platform for teachers, providing teachers a national google account, and identifying champion teachers and schools to support others and showcase best practices to other schools. Another successful program between UNESA and Uni Newcastle has seen the use of simulation and emerging technologies to better prepare their students for the ever-changing demands of the teaching profession. The virtual classroom offers the opportunity to practice teaching children and respond to irate parents. Each of these has shown a significant increase in the efficacy of our future teachers (Fischetti et al. 2022; Rappa & Ledger 2022).

## 6 DISCUSSION AND CONCLUSION

When we reflect on our global response to the pandemic, three key attributes were evident during COVID-19: A. *Leadership* and the dissemination of information, B. *systems-level responses* to the pandemic, in this case, health systems, and C. *citizen and citizenship responses*. The World Health Organisation (WHO) was a significant leader during this time, guiding each nation-state and keeping the world updated regarding numbers, infections, spread, and details about the disease. Each country and jurisdiction responded to the WHO’s advice accordingly regarding their needs, capacity, and resources. Unfortunately, significant disparities were witnessed across nations and within. The majority of citizens were extremely loyal and responsive to the recommended actions. No one will ever forget the scenes from Italy during the COVID-19 pandemic. They were singing from their balconies during the lockdown or the myriad of mask-clad faces in Japan and the empty streets of New York. Initially, the world was isolated, socially distanced, masked up, and responded to the

demands with empathy and understanding. The longer it continued, the more information was gained and adaptations and adjustments implemented. The world is now living with COVID as a communicable disease. We will discuss these three significant elements concerning the current teacher shortage.

## 6.1 Leadership

Therefore, who is the equivalent of WHO for education? Who is the global voice responsible for Education? Is it the OECD or UNESCO? With a clear global voice, global updates, information, or coordinated efforts, each country is responding in its own way, and many need to be made aware of the globality of the issue. If we compare WHO to OECD and UNESCO, it is evident that global educational leadership needs more clarity. A quick review of the aims of each organization offers a great comparison.

### World Health Organisation

*The World Health Organization puts science to work to build a healthier, safer world. It leads and champions global efforts to achieve better health for all. By connecting countries, people and partners, we strive to give everyone, everywhere, an equal chance at a safe and healthy life.*

*From emerging epidemics such as COVID-19 and Zika to the persistent threat of communicable diseases, including HIV, malaria, and tuberculosis, and chronic diseases such as diabetes, heart disease, and cancer, we bring together 194 countries and work on the frontlines in 150+ locations to confront the most significant health challenges of our time and measurably advance the well-being of the world's people.*

### The OECD

*The mission of the OECD is to promote policies that will improve people's economic and social welfare in developed nations. The main purpose of the OECD is to improve the global economy and promote world trade. It provides an outlet for the governments of different countries to work together to find solutions to common problems. It includes working with democratic nations that are committed to improving the economy and well-being of the general population.*

The OECD's focus on economics is reflected in their recent overview of the teaching profession:

*Typical areas for reform in all sectors include staff qualifications, initial education and training, professional development, performance appraisal, and employment and working conditions. Since the size of the teaching workforce is considerable – schools are the largest single employer of graduate labor – and teachers are a costly resource in education, teacher policies affect many people and can have substantial financial implications. (OECD 2022)*

Whereas UNESCO's mission aims to

*contribute to the building of a culture of peace, the eradication of poverty, sustainable development, and intercultural dialogue through education, the sciences, culture, communication, and information*

The recent development of the Sustainable Development Goals is positioning UNESCO as the global guardian of ALL. When UNESCO talks about education, they focus on four pillars—learning to know, learning to do, learning to live together, and learning to be—as fundamental types of learning that form a whole to guide educators across the human lifespan. The economic cost does not lead the discussion; instead, the focus is on education for

citizenship and peace. However, they are omnipresent and cater to more than education alone.

Who is the educational WHO equivalent responsible for leading better education for all? Our first recommendation would be to determine who should lead the global education voice. UNESCO and OECD would benefit from defining roles and responsibilities globally, but more importantly, would we be better placed to form a World Education Organisation? With educational leaders and experts from around the globe, Deans of Education, education sectors, teachers, and principals.

## 6.2 *Education systems level responses to the pandemic*

In many countries, education systems encompass multiple systems, for example, state, private and faith-based systems. The further complication is that the system segments itself into: pre-service, service, professional development, leadership, and casualized workforce. Unfortunately, each of these contributing elements is often segmented and isolated from the others regarding policy decisions and practical implementation. This segmented construct can impact efficiencies and consistencies. The current teacher shortage impacts each of these segments.

Our second recommendation calls for a ‘whole of profession’ approach to policy and practices impacting the teaching profession. This includes: attracting and recruitment into the profession, pre-service teaching, transition to teaching, in-service teaching, casualization of teaching, professional development of teaching, performance, and promotions, and rural, remote, and hard-to-staff schools. Input from each profession segment is needed to establish and implement effective policies and practices. Current examples see policy decisions at odds with each other, for example, Australia’s continual quality push but policy allowing unqualified teachers into the workforce and Indonesia’s ‘honorary teacher’ program. One strategy is to build our own teacher workforce IN the regions FOR the regions. (Refer to Halsey Report).

Recent concern in Australia has resulted in a 2022 “National Teacher Workforce Action Plan”. The plan will focus on five areas: “elevating” the teaching profession, improving teacher supply, strengthening teaching degrees, maximizing teachers’ time to teach, and a better understanding of future workforce needs” (Sahlberg 2022). This plan is expected to be approved in December, but as Sahlberg explains, it needs to include the root of the problem’s “unproductive work conditions and pay”.

## 6.3 *Citizen and citizenship responses*

Education sectors have piloted a range of initiatives and policies to attract qualified teachers into the workforce and enticed mid-career, retired, and those who have left the sector back into the workforce with monetary and conditional changes. The people involved in each of the segments outlined previously—Initial Teacher Educators, Teachers, and Leaders—have responded to enforced policies and practices with creativity resulting from necessity. Initial teacher educators have modified their programs to respond to the new department policies. Principals have reimagined school structures, teachers have gone beyond expectations, and parents have been flexible and understanding because all segments want to ensure our students learning is not compromised.

Our third recommendation is to focus on a whole-person approach to our schooling system. We need to move from our current obsession with simplified measures of success—Science, Math, and English results to a more rounded and grounded approach that looks at the student, teacher, principal, and leaders within the system from a health, well-being, and affective domain lens in addition to the cognitive lens.

This exercise in comparing policy and practice responses to pandemics in the Health field (COVID-19) to that in the Education field (Teacher shortage) provides insight that can help us drawing informed changes in our current approaches and recommendations for future.

First, the WHO was a crucial factor in managing COVID-19 responses. Education, however, has a different global body to guide. But instead, education remains one of many sections embedded within larger organizations, UNESCO and OECD. We call for a World Education Organisation (WEO). Second, education sectors are diverse and segmented. We call for a “whole of profession” approach to the development of policy and practices within the sector. Third, people across all sectors have been great global citizens and responded to the challenges of the pandemic promptly and creatively. However, this additional burden has further compounded the burden placed on the sector, schools, principals, teachers, and students, resulting in high-stress levels, physical and mental health deterioration, and burnout. It is a reminder that the health and well-being of our students, teachers, and principals continue to be under pressure and are now more susceptible to work-related stress and burnout. (Turner et al. 2019). We call for a whole-person approach to the system to support, value and measure all affective, physical, emotional, and cognitive domains.

In addition to the above three recommendations, we need equity as an overarching lens for all decision-making, policies, and practices (Ledger 2020; Schleicher 2021; Watterson 2022). The disparities evident in COVID-19 responses are concerning and should be a reminder of the need to mitigate the power imbalance. To witness western nations hoarding vaccines while others had limited access is one such example. The inequity related to your postcode remains significant. We need to ensure that policy and practices do not remain metro-centric (Ledger et al. 2019) nor continue the “persistent and entrenched locational disadvantage” (Reid 2017, p.88).

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## Housework as a positive function of healthy children in family education – Current status in contradiction with tradition

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**ABSTRACT:** Housework is essential for the healthy development of children. This has been emphasized in Chinese tradition for thousands of years, except that most parents nowadays prefer to waive kids' housework for reasons like heavy homework, too naïve to finish housework well, too much work afterward, etc. Given the top importance of building a sense of control, a sense of belonging (e.g., to the family and school), a sense of life meaning in the healthy development of children, and the basic contributions of housework in the process of such building, it is disappointing to conclude that traditional wisdom in culture has not been well inherited in many families as indicated by investigations in kinder gardens, primary schools, middle schools, and universities in mainland China. Classic doctrine in traditional documents on housework is briefly introduced, as the collective unconsciousness of Chinese culture, for the reconnection between modern life and cultural tradition for the healthy development of children in both family education and school education.

### 1 INTRODUCTION

Jesus' apostle Paul claimed that 'I know that nothing good lives in me, that is, in my sinful nature. For I have the desire to do what is good, but I cannot carry it out. For what I do is not the good I want to do; no, the evil I do not want to do—this I keep on doing. (New Testament, Romans 7:18-19) Similarly, people keep doing what is not good. For example, culturally rich tradition has often been ignored because it is not the focus of modern 'science'. This has been a common phenomenon in developing countries because of the societal modernization.

As an example, this article will discuss how 'housework was ignored in family education, no matter whether it plays an important role in the healthy development of children, regarding kids' sense of control, belonging, and meaning. As a matter of fact, studies on 'housework' have been increasingly published in Mainland China. They have been mainstream in education studies in the past ten years (over 800 articles per year), although blocked somehow by the COVID-19 pandemic, as indicated by Figure 1 (retrieved 2022.8.4 by keyword 'housework/家务').

However, China Youth Daily conducted an online survey with 2011 participants (81.7% of whom are parents of children) in central cities (29.8%), province capital cities (47.6%), regional cities (19.3%), county towns (2.7%), and the countryside (0.4%). Among participants, 94.6% said parents do too much for their kids, including necessary housework (with an opinion on the frequency, 28.3% very popular, 66.3% quite popular, 5.0% not popular, 0.3% rare). 64.9% knew this would increase the dependence and decrease kids' independence significantly. (<https://baijiahao.baidu.com/s?id=1731233453871984313&wfr=spider&for=pc>)



Figure 1. Published studies on housework in Mainland China (cited from cnki.net).

Why do parents do good things but not do good things?

### 1.1 *Housework is ignored: For kindergarten-aged toddlers*

There is evidence showing that housework has been waived or ignored by parents and children as well. Investigations provided reliable data in addition to daily experience and observation.

Given the importance of housework for healthy development, especially in childhood, the attitudes of both parents and kids towards housework need to be more positive, never mind

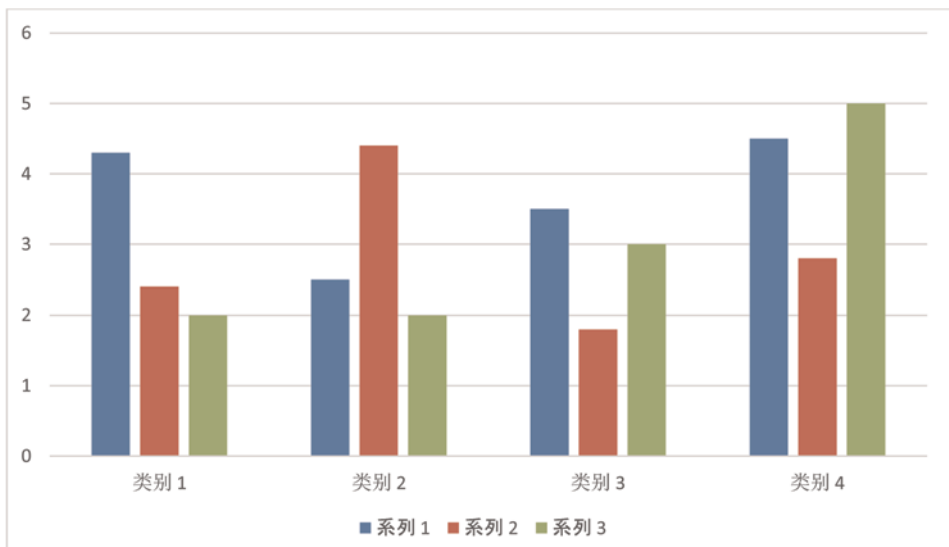


Figure 2. Percentage of toddlers' in home participation of housework (made by Fan 2021).



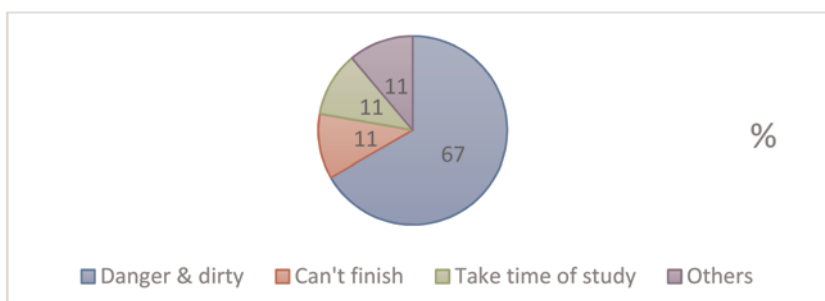


Figure 3. Parents' negative concerns about toddlers' housework participation (made by Fan 2021).

the actual practice. For example, the percentage of toddlers' housework is 11.11 % (can), 55.56% (sometimes can), and 33.33% (no) (Fan 2021).

### 1.2 Ignored housework: Primary school?

The situation in primary school has changed much, however. As an investigation (Chen & Chen 2017) indicated, 90.2% of 2301 primary school students (in Xiangtan City, Hunan Province) often participated in housework (cleaning, washing dishes, cooking, dishwashing, etc.); 9.8% participated in some of the time. Why such a dramatic change, given that the homework from class has become time-consuming? Could primary students' social skills contribute to their answers to the questions in the questionnaire? The article by Chen and Chen (2017) did not discuss these issues about age difference and comparison of life and study situations, implying that more verification is required on such a conclusion.

### 1.3 Middle school housework ignored

Middle school students are struggling with academic knowledge and are, therefore, less involved with housework in general (Li 2021). Li (2021) developed a scale of middle school students' attitudes toward housework, with 15 items distributed into 3 subscales (7 in subjective cognition of the housework subscale; 5 in the emotional experience of the housework subscale; and 3 in the behavioral tendency of the housework subscale). The scale has good reliability and validity and was proved dependable as a measure for middle school students' attitudes towards housework.

Applying the scale, Li (2021) found that 1) middle school students generally have a high score on their attitude towards housework, especially on their subjective cognition of housework. However, there is a gap between "knowing" and "doing" their housework. Junior high school students score significantly higher than senior high school students in the total scale and emotional experience of housework. City students' mean scores are significantly higher than those of students from rural areas in terms of total scale, subjective cognition of housework, and emotional experience of housework. There were no significant differences between scores in demographic variables such as gender, only-child/not only-child status, and household registration location.

### 1.4 Long-term effect of house work ignorance: University campus

There is a long-term effect on college students regarding housework involvement from childhood, especially in relation to students' campus survival capability (Zhang 2021) and mental health (Liu & Shi 2021).

## 2 IN CHINESE CULTURE, TRADITIONAL WISDOM ABOUT THE HOURS

### 2.1 Family education with a focus on housework

Confucious denominations pay attention to housework in early childhood education in the family. There are two examples. Saints Xi ZHU (朱熹, 1130 – 1200) wrote a book 《Instructions for Children (童蒙须知)》 (Figure 4), listing housework as one of the six issues, i.e., closing, social behavior, housework, reading and writing, others (原叙、衣服冠履、言语步趋、洒扫涓洁、读书写文字、杂细事宜).

Other awe-inspiring examples come from General Guofan ZENG (曾国藩, 1811-1872). In his hustle and bustle of the daily life of governmental affairs, he kept writing to his parents and siblings – some of those letters were collected in the book 《Letters to family member(曾国藩家书)》. In one of those letters, he required siblings to teach children to be diligent in life (勤)、Sincerity (敬)、Harmony (和). Letters were divided into eight categories: cultivation, encouraging learning, family management, administration, military, social interaction, health care, and financing. 修身、劝学、治家、为政、军事、交友、养生、理财). Housework is a key capacity-building activity for family management and individual development (Zhang, 2021) in the doctrine of Chinese traditional education.

There is a good tradition in Chinese education, especially in ancient China, to guide students from the reading table in the study room to the outside garden and natural land, to enlarge their vision of life and their self-concept. Daoism classics such as 《Lao Zi, 老子》《Zhuang Zi, 庄子》《Lie Zi, 列子》 are rich in dialectic methods of analysis and world views. Children recite many classics without fully comprehending them, but they all become collectively conscious and benefit Chinese throughout their lives.

Famous family mottos that include teaching on housework include the 《Yan family(颜氏家训)》 (Zhitui YAN, 531-597), 《Yuan family (袁氏式范)》 (Cai YUAN ?-1195), 《Zhu family (朱子治家格言)》 (Bolu ZHU 1627-1698, Figure 5). All these books discussed housework with respect to content, daily application, and importance concerning capacity building, healthy development of character, and family relationships.



Figure 4. 《Instructions for Children. (童蒙须知)》



Figure 5. 1 sentence of 《Zhu family. (朱子治家格言)》

### 3 DISCUSSION & CONCLUSION

#### 3.1 *Three senses at the start of life*

Housework is fundamental training for a child to develop a sense of control, a sense of belonging, and a sense of life meaning, all of which are solid foundations for long-term existence and life span development. This is quite different from Western culture.

#### 3.2 *Healthy development and healing in the family (community) setting*

Cultural-specific (family and school-based) education is so important that more and more mental health problems are coming from cultural ignorance in the current world, especially in the Western world and those nations that have been cloned once. Real healing can only be achieved in a community setting, which means that the unconditionally adopted Western psychology around the world is quite limited in healing mental health problems (Reimer & Dueck 2009).

Henrich, Heine, & Norenzayan (2010 a/b) published two articles for their famous study on WEIRED psychology. They found that 96% of the participants in top journal articles are Western, Educated, Industrialized, Economically developed, and Democratic (WEIRED). This means that only 4% represents 88% of the world's population (and related culture). Our family and school education are weird to some extent in this regard.

#### 3.3 *Educational cultural traditions: Western imperialism in psychology*

The imperialism of Western psychology has been discussed by Western psychologists, in addition to the findings and discussion in Henrich, Heine, & Norenzayan (2010 a/b). Reimer & Dueck (2009). Ethan Watters (2010).

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# The impact of expenditure in education toward poverty reduction

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**ABSTRACT:** The Thailand government has implemented various education policies that contribute to higher enrolment in education but has become aware that these policies might be less effective for poverty alleviation. This study investigates the relationship between expenditure on education and the poverty issue. Using a linear regression analysis, combining district data from 1997–2020 on education expenditure and the poverty issue in Thailand society, the findings show that education spending is significantly related to the severity of poverty and the number of poor households at 5. Reducing the vulnerability of households might provide equal access to these opportunities.

## 1 INTRODUCTION

The sustainable development goals adopted by the United Nations in 2015 emphasize poverty reduction and inclusive growth. In India, development policies focusing on poverty reduction have been implemented since independence. However, there is evidence of rising inequality and a slowing down in the rate of poverty reduction after the introduction of economic reforms. The state governments in India have a vital role in poverty alleviation. Thus, it is necessary to measure the performance of the states in respect of the same. Data envelopment analysis considers input variables: growth, development expenditure, irrigation, and government performance (OECD 2012).

The Ministry of Education's expenditure is supported by the government every year. However, the amount of educational expenditure depends on the country's situation and the government's policies. However, because of the accumulation of qualified human development, including well-being, the effects of education on economic growth are widely acknowledged. Education is a significant factor in the country's ability to be considered a strong foundation that leads to development in various fields, including research, sustainable development, science, technology, and innovation (Khau & Huynh 2022; Li 2022). Every aspect of society is linked to the base. In particular, economics might be a related educational aspect. The importance of education as an essential determinant of economic growth has been acknowledged for a long time.

The severity of poverty is a measure that considers the poor with severe poverty or whose expenditures are substantially below the poverty line. The severity of poverty is calculated by putting much weight on values much lower than the poverty line (Herianingrum et al. 2020). This indicator allows us to monitor the progression of extreme poverty situations. Although they are a small number, they are the group that will be the hardest to get out of poverty (Office of the National Economic and Social Development Council 2022).

Household poverty has been conceptualized as a matter of gender inequality, with differential access to resources within the family/household leading to underestimation of the extent of poverty generally and hidden or invisible poverty levels within the family/

household. Households struggle to capture the unequal (and often unfair) distribution of income within the household or family; household money management; and mothers' known willingness to forego their own material needs in favor of others, particularly their children (Warburton 2011).

Poverty is seen as a lack of opportunities that enhance a person's ability to live tolerably. Education is one such significant opportunity, the deprivation of which is a form of poverty. Education is a merit good and is also seen as a public good that generates a variety of externalities (De Prada et al. 2022; Ho 2022). Internationally, education, particularly schooling and especially primary education, is recognized as a basic need (Aslam et al. 2022). In the context of Indian development planning, it is considered one of the critical "minimum needs." The literature on the relationship between education and development also emphasizes the role of education in reducing income poverty, meeting other basic needs, and improving the quality of life (Tsai et al. 2022).

For many decades, empirical analysis in the context of Thailand's well-being has been studied. Therefore, this paper attempts to re-investigate the earlier conclusions about the relationship between education expenditure and the poverty issue. The paper provides a brief review of literature in Thailand and globally, describing the model and the data used in the analysis. Results and findings are interpreted to suggest a policy that might support poverty alleviation.

## 2 REVIEW OF LITERATURE

Studies on the relationship between education and economic growth have been conducted in various dimensions. Afzal et al. (2010) conducted a study investigating short-run and long-run linkages between school education and economic growth in Pakistan and confirmed a direct relationship between them.

South Asia is a highly populated and poverty-ridden region that barely spends 0.9% of its GDP on education (Bukhari et al. 2021). The study by Bukhari et al. (2021) found that an initial increase in secondary enrolment increases poverty but later leads to a decrease in poverty. They also propose that education policy is formulated separately for each level of education to extract maximum gains for the workforce.

Jung & Thorbecke (2003) suggested that education expenditure can raise economic growth; education expenditure can also be effective for poverty alleviation. Weilin, Jingdong & Rong (2021) explained that different education levels have distinct effects on rural poverty; furthermore, regional poverty alleviation policies should combine regional education. Differences and learning from poverty alleviation through education experience in surrounding areas for targeted poverty alleviation measures in China by improving education (Dilip et al. 2020).

Odiar (2014) found that reallocating government expenditure to the education sector is essential in determining Nigeria's economic growth and poverty reduction. Education services should receive the highest priority in public investment for improving human capital and reducing poverty. However, the study of Nkurunziza et al. (2015) found that direct financial or in-kind support is negatively related to paying for the children's schooling, while non-agricultural employment opportunities, in particular, seem to stimulate education investments. No long-run relationship between the poverty rate and education expenditure. However, they suggested that policies should be made to promote adult literacy levels and reduce the poverty rate in the region. Indicated that the variables of education expenditure and health expenditure partially harm poverty.

The empirical analysis in the context of the Thailand economy is presented in this paper. It attempts to re-investigate the earlier conclusions about the relationship between education expenditure and poverty. Thus, the objectives of this research are as follows:

- (1) To investigate the relationship between educational expenditure and poverty.
- (2) To make policy recommendations to the government to promote more sustainable education.

### 3 METHOD

The empirical analysis examines the relationship between education expenditure and poverty using linear regression analysis.

#### 3.1 Data description

This paper has attempted to find the impact of education expenditure on the poverty issue in Thailand society. A data set from 1997–2020 was taken.

Table 1. Data description and source.

Variable	Definition	Data Source
Violence	Severity of Poverty	Office of the National Economic and Social Development Council (2022)
Budget	Expenditure in Education	Government Fiscal Management Information System (2020)
Family	The Number of Household Poverty	Office of the National Economic and Social Development Council (2022)

These statistical concepts are illustrated using a data set from the Office of the National Economic and Social Development Council (2022) and the Government Fiscal Management Information System (2020).

#### 3.2 Research design

- (a) The first step of the empirical analysis tests the integration of the variables, that is, education expenditure (budget), expenditure on education (budget), and the number of households in poverty (family). When the data were checked for normal distribution, these variables had normal distribution, which is classified under the conditions of linear regression analysis. Considering the forecasting trend, found that the data has the characteristics of an increasing trend, which means the form of forecasting is;

$$Y = \beta_0 + \beta_1 X \quad (1)$$

where Y is a dependent variable

X is an independent variable  $\beta_0$

is constant, and  $\beta_1$

is the regression coefficient

- (b) The paper utilizes the technique of vector error correction models. The technique is accomplished in four steps.
- (c) Finally, the forecasting model was compared by considering the coefficient of determination ( $R^2$ ). The highest  $R^2$  values mean that the forecasting models are most suitable.

### 4 RESULT

Model 1: Analysis of the relationship between expenditure on education and the severity of poverty between 1997 and 2020.

From Figure 1, the data is surrounded by straight lines, which means the forecasting data for the expenditure on education affects the severity of poverty with normal distribution. The data has also shown a higher forecasting trend. From the predictive model analysis, expenditure on education is significantly associated with the severity of poverty at 0.05. It is found that the equation is;

$$\text{Violence} = 8.42 - 0.000016\text{Budget}.$$

The  $R^2$  is 60.5%, which means the model fits the data well. The result indicates that expenditure on education can explain the variance in the severity of poverty by 85.1%.

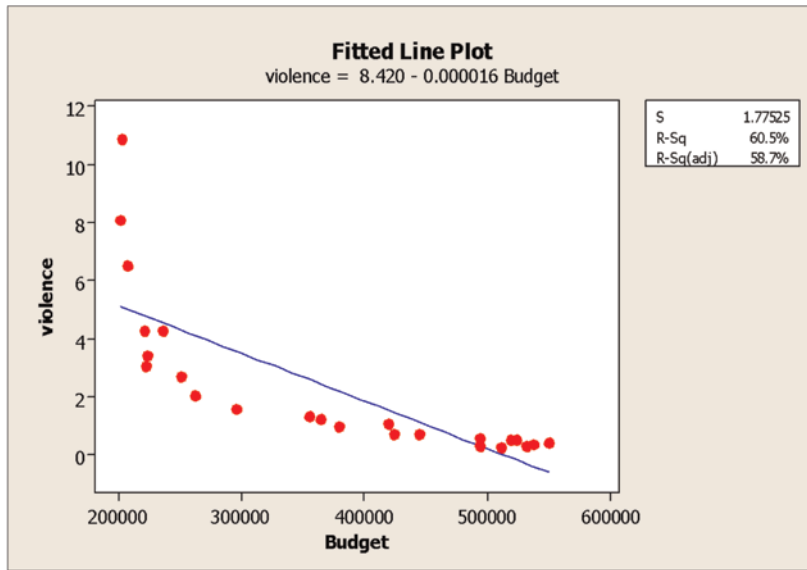


Figure 1. Analysis of the relationship between expenditure on education and severity of poverty between 1997 and 2020.

Model 2: Analysis of the relationship between expenditure on education and the number of households in poverty between 1997 and 2020.

From Figure 2, the data is surrounded by straight lines, which means the forecasting data for the expenditure on education affects the number of households in poverty with a normal distribution. The data has also shown a higher forecasting trend. From the predictive model analysis, expenditure on education is significantly associated with the number of households in poverty at 0.05. It is found that the equation is;

$$\text{Family} = 9290 - 0.01501\text{Budget}.$$

The  $R^2$  is 89.20%, which means the model fits the data well. The result indicates that expenditure on education can explain the variance in the severity of poverty at 89.2%.

The importance of education for economic development was first spotted by the father of economics, Adam Smith (Evensky 2015). Adam Smith represented the idea of specialization of labor. According to Smith, the annual output of a nation depends on two factors: the amount of labor employed in the production and the productivity of labor. According to Smith, the first factor is less important than the other factors, as can be seen from the fact



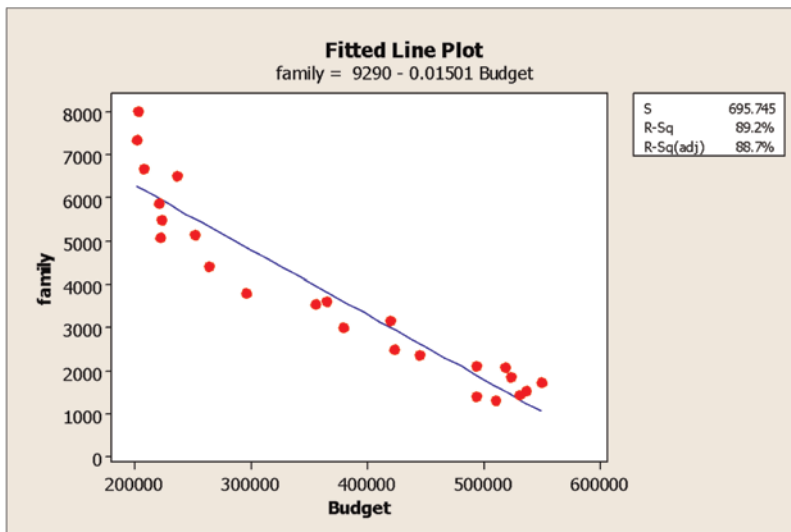


Figure 2. Analysis of the relationship between expenditure on education and the number of household in poverty between 1997 and 2020.

that people in earlier times lived much poorer than modern people, even though the percentage of employed labor was much higher. Smith indicates the importance of the division of labor as a first-rate factor in increasing national wealth.

Inseparable relationships characterize educational, political, social, and economic relationships. Politics, the economy, and education are essential factors for the country's development. Investing in education will play a vital improvement in the country's sustainability. As discussed above, policy instruments are based on the direct regulatory approach. Taking the results of this study into account, as well as people's well-being, education expenditure should be considered a vital variable, which implies that education contributed to economic growth in Thailand. I make the following policy recommendations, which the government should sincerely support to achieve long-term poverty alleviation in Thailand, beginning with educational investment:

- (1) Create an adequate information and education program in rural communities to improve public education and contribute to future educational access. According to Lorenzo (2008), "Access to natural resources is broadly defined here as the processes by which people, individually or collectively, can use natural resources, whether on a temporary or permanent basis", as well as education, which is based on the resources that a citizen can have. People should have equality in educational foundations to make their lives better in the future. The development of the existing knowledge system would prove a valuable educational tool (Cotula 2008; Chhabra et al. 2022). The education programs must educate students democratically. Furthermore, the education programs must recognize how their practices contribute to sustainable growth. At the local level, governments should promote education in schools, local communities, and civic organizations. Therefore, the government should seriously support education in Thailand with funding, resources, and experienced staff. Moreover, the government should provide funding for educational institutions that provide educational programs.
- (2) Making available financial assistance helps students to provide an incentive to try something new. Educational finance is strategically crucial for eradicating extreme poverty and boosting shared prosperity. Government policies from the past to the present do not solve long-term problems; they solve the problem at that time in the era of

each government. Though the Student Loan Fund has assisted many students, the fund does not cover living expenses during the study. The government should also launch policies about financial strategies and enhance access to suitable financial services for students, particularly in the backcountry. For example, the government supports loan programs with low-interest rates or no interest for poor students in the backcountry or rural areas. A long-term loan is an exciting policy that the government should support to reduce students' debt burden.

- (3) Educational institutions play a vital role in human capital. According to the OECD (2012), countries' fare in the global market is determined by the skills available in the labor force and the price of those skills from human capital development. As services and production systems become complex, they require workers with higher levels of education. To attract and retain skilled workers, societies must strike the right balance between fostering overall equity and offering strong economic incentives (Dekeyser et al. 2022). Increasing attainment levels in the population, better employment prospects, and the increased earnings that come with higher educational attainment can all contribute to growth and prosperity in OECD countries. In this context, labor income growth in GDP by educational category provides a simple measure to illustrate this move towards higher skills and its impact on economic growth. People should receive a thorough education to have a meaningful life. The increasing educational budget has resulted in the increasing accessibility of the school-age population, especially at the elementary and middle school levels (Berman et al. 2011).

## 5 CONCLUSION

In this paper, we investigated the impact of expenditure on education on poverty reduction in Thailand from 1997 to 2020 using linear regression analysis. The empirical result suggests an impact between expenditure on education, the severity of poverty, and the number of households in poverty. Thus, education expenditure should be considered a critical variable, which means that education contributed to economic growth in Thailand during the estimation period. If the country's population were well educated, it could also develop its economy. Because most developed countries have excellent education systems, they can create new technologies with added value. Developing countries could be more efficient in terms of education, statistically. Therefore, education is one of the most critical matters and deserves a significant investment because it will enable people to lead good, meaningful, and entire lives.

This study has shown that poverty alleviation tools that help reduce the vulnerability of impoverished households by providing livelihood security and protection from financial shocks should continue to be used to provide equal access to an adequate education. In conjunction with a further reduction in the birth rate, social protection policies could help poor households invest more in their children's education in the short term, hoping they will also benefit from further diversification of the economy in the long term.

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## Analysis of information literacy and argumentation skills by a prospective science teacher

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**ABSTRACT:** Information that is widely available and unlimited in cyberspace requires special skills to be able to use it properly. Using valid information is essential in making decisions so that the arguments given are strong. Strengthening information literacy directs students to a self-directed learning approach so that capability learning will be formed to become lifelong learners. This study aims to determine prospective science teacher students' information literacy and argumentation skills and the relationship between the two. Organizing information requires critical thinking skills to evaluate and group information as needed. This study is quantitative research with a survey design, data obtained through information literacy instruments oriented to empowering eight information literacy models with eight indicators, and argumentation instruments consisting of four indicators. The sample of the study was 128 students of science teacher candidates consisting of 9 males and 119 females. The results showed that in the information literacy skills on the eight indicators, the average percentage of Linkert obtained good criteria, but the indicators for organizing information stayed with sufficient criteria. Based on the four indicators of argumentation skills, an average score of the percentage of correct answers with sufficient criteria is obtained only on the indicator of identifying claims and the claim qualifier with fewer criteria. The low skill in determining claims and qualifiers is due to the ability to organize the information obtained to be used as evidence that will be used as warrants for the selected claims also still needs to be improved. Interestingly, based on the SPSS correlation test that has been carried out, the correlation coefficient is 0.167, which means that the correlation between information literacy skills and student argumentation skills, in this case, is very low. Further research is needed on how to develop these two skills better simultaneously.

### 1 INTRODUCTION

Uncertainty in decision-making can be minimized by providing vital information as a reference source. A good decision must be supported by vital and valid information (Singh & Grizzle 2021). Information literacy is needed so that someone can be comprehensive in understanding information and using it correctly (Bapte 2019). This skill is critical to optimize information, especially from digital platforms. They provided opportunities for students to develop self-directed learning by independently accessing information according to their needs (Gibbons 2003) and using any method under any circumstances and whenever students can achieve their learning goals (Gibbons 2003). Building learning abilities and optimizing thinking skills so that students become the center of their learning (student center learning) and be responsible for their learning (lifelong learning) in solving problems by

themselves. The pre-service teachers are facilitators who will guide students through their learning process (Lase 2019). Students are trained to think in terms of dynamic and adaptive models (Leo 2007), especially in the 21st century or the era of disruption. Students can immediately follow instructions, words of approval, corrections, suggestions, or praise. In other words, students are only sometimes dependent on the teacher (Leo 2007). Teachers are tasked with facilitating learning needs to guide students/scaffolding (Vogel et al. 2022).

Another essential skill that must be mastered in this century for students is argumentation skills, especially scientific argumentation. Mastery of these skills allows students to analyze, make decisions based on the thinking process, and apply their knowledge in solving daily life problems (Fakhriyah & Masfuah 2021) to carry out learning tasks and professional activities (Noroozi et al. 2020). Argumentation skills are recognized as essential in determining student success in learning at school and at a higher level of education (Frey et al. 2015). Education in science subjects focuses on improving students' scientific argumentation skills, especially related to scientific issues (Osborne et al. 2004) (Osborne et al. n.d.). This is because argumentation skills are the best way to create scientific controversy (Garrecht et al. 2021). The scientific argument is a critical component of the framework for the new K-12 science education standards. It can develop the ability to analyze and evaluate (Quinn et al. 2012), a critical thinking skill because it places students to understand problems (Wade 1995).

The ability of students to find alternative solutions to existing problems and build the quality of their arguments are supported by their information literacy skills (Belland & Kim 2021). This means that information literacy and argumentation skills cannot be separated (Radcliff 2014), which is also closely related to the support of computer scaffolding (Kim et al. 2022).

It is still unclear whether information literacy and argumentation abilities are always related. Information literacy skills, especially skills in analyzing information sources, have proven to be inadequate (Marttunen et al. 2021), so the enrichment of analytical skills for claim-warrant transformation can be focused more on (Viyanti et al. 2020) and needs improvements to enhance argumentation skills (Noviyanti et al. 2019). A person's argument is also influenced by concerns for the truth of the information that is currently a threat (Lebid et al. 2021).

## 2 METHODS

This research was a quantitative survey design (Creswell 2014), which collected data on information literacy skills and argumentation skills of prospective science teachers in the science education study program at the State University of Surabaya (Unesa). Overall, the questionnaire was distributed to 155 students, and 128 completed and returned the questionnaire, with a response rate of 82.6%. This research targeted first- and second-year students enrolled in the 2021/2022 academic year at Unesa.

The information literacy instrument was adapted to the indicators of the information literacy model empowering eight by Wijetunge (2009), which consists of eight indicators: 1) information identification skills, 2) exploring, 3) selecting, 4) organizing, 5) writing from the information obtained, 6) presenting or communicating, 7) accessing input, and 8) using input for improvement (Wijetunge & Alahakoon 2009). The instrument was developed with the type of multiple-choice questions using a Linkert scale of 1 to 5 but not a scale of 3 (Chyung et al. 2017). The instrument has been validated by five professional lecturers in science education and declared valid.

The scientific argumentation skill instrument consists of four indicators, namely: 1) identifying claims and qualifiers from claims, 2) identifying the type of data and its quality, 3) identifying the reasons and quality, and 4) showing rebuttal and counterarguments (Frey et al. 2015). Data on argumentation skills were obtained from instruments adapted from Frey; 2015 and declared valid. Instruments were given to participants online, the data was then analyzed descriptively, and the correlation was tested using SPSS 26.

### 3 RESULT AND DISCUSSION

#### 3.1 Student information literacy test results

The survey design conducted in this study aims to explore a quantitative description of information literacy skills and the argumentative level of pre-service science teachers at Unesa. The survey design is a quantitative research that can provide quantitative or numerical descriptions of a population's trends, attitudes, or opinions by studying a population sample (Creswell 2014). The results of this study, as in previous studies by (Wijetunge & Alahakoon 2009), were used to provide feedback to students about the strengths and weaknesses of using information literacy and efforts to overcome them (Wijetunge & Manatunge 2014). The instrument that is used consists of twenty questions distributed on eight indicators. The results of the detailed information literacy test recapitulation are shown in Table 1.

Table 1. Recapitulation of student information literacy skills.

No	Skill Aspect	Number of Questions	Score	% Linkert	Interpretation on category
1	Identifying	2	4.25	85%	Very Good
2	Exploring	3	3.7	74%	Good
3	Selecting	3	4.14	83%	Good
4	Organizing	3	3.26	65%	Enough
5	Creating	2	4.17	84%	Good
6	Communicating	2	3.74	75%	Good
7	Accessing Feedback	2	4.5	90%	Very Good
8	Using Feedback	3	4.37	88%	Very Good
		20	4.02	80%	Good

The data results of student information literacy skills based on Table 1 show an average score of 4.02 out of a maximum score of 5, with the Linkert scale reaching a percentage of 80%, which can be categorized as good. The indicator's average and the lowest percentage is organizing information, with an average score of 3.26 and a percentage of Linkert 65% as sufficient criteria. There are three indicators with outstanding criteria: identifying, accessing input, and using feedback. Meanwhile, there are good criteria for three indicators: exploring, selecting, creating, and communicating.

The results of the Linkert frequency analysis using SPSS from one of the indicators with excellent criteria, namely identifying, are shown in Table 2. The results of the Linkert frequency analysis of the indicator with the lowest average, namely organizing, are shown in Table 3 in detail.

Table 2. The Linkert frequency table for each question from the identified indicator .

		X1.1				X1.2					
		F	P	VP	CP			F	P	VP	CP
Valid	Seldom	12	9.4	9.4	9.4	Valid	Seldom	11	8.6	8.6	8.6
	frequency	60	46.9	46.9	56.3		frequency	61	47.7	47.7	56.3
	Always	56	43.8	43.8	100.0		Always	56	43.8	43.8	100.0
	Total	128	100.0	100.0			Total	128	100.0	100.0	

F = frequency, P = percent, VP = Valid Percent, CP = Cumulative Percent.

Table 3. The Linkert frequency table for each question from the indicator organizes.

		X4.1				X4.2					
		F	P	VP	CP			F	P	VP	CP
Valid	Never	3	2.3	2.3	2.3	Valid	Never	3	2.3	2.3	2.3
	Seldom	67	52.3	52.3	54.3		Seldom	47	36.7	36.7	39.1
	Frequency	45	35.2	35.2	89.8		Frequency	65	50.8	50.8	89.8
	Always	13	10.2	10.2	100.0		Always	13	10.2	10.2	100.0
	Total	128	100.0	100.0			Total	128	100.0	100.0	
		X4.3									
		F		P		VP		CP			
Valid	Never	3		2.3		2.3		2.3			
	Seldom	37		28.9		28.9		31.3			
	Frequency	67		52.3		52.3		83.6			
	Always	21		16.4		16.4		100.0			
	Total	128		100.0		100.0		100.0			

F = frequency, P = percent, VP = Valid Percent, CP = Cumulative Percent.

Observing the data frequency answer from two indicators with the category of “very good” and “enough” shows that there are differences in the choices of “never” and “rarely” on the indicator of identification; the percentage of the answer “never” obtained from 128 respondents, while the answers “rarely” were obtained from two questions 9.4% and 8.6%, respectively. In organizing the three questions, the percentage of participants that chose never is 2.3%, 2.3%, and 2.3%, while participants that answer rarely are pretty high, 54.7%, 39.1% and 31.3%. The data show that students can identify the information needed very well, while organizational skills still need improvement. Based on this data, the skills of organizing information must be emphasized in learning so that students have advanced organizing skills (Moreno 2010) and can create a database of all information in several categories (Kidd & Keengwe 2010). This is important because information processing requires good organization (Santrock 2011), so knowledge management in decision-making can be achieved (Kelley 2008) because the quality of decisions is influenced by the information content held (Gresch et al. 2017).

### 3.2 Student argumentation skill test results.

The instrument scientific argumentation skill consists of fifteen questions with four indicators. The first indicator identifies the claim and the qualification consisting of three questions. The second indicator identifies the type of data and its quality consisting of six questions. The third indicator assesses the reason and quality consisting of three questions, and the fourth indicator shows rebuttal or counterarguments consisting of three questions. Data from the argumentation skills test results are mapped based on the percentage of correct answers from all respondents on each indicator, as shown in Table 4.

To understand the importance of argumentation skills, educators need to see how much students, especially pre-service science teachers, possess these skills. We can emphasize which indicators still need to be mastered from the results. The data in Table 4 show that from 128 respondents who answered the 15 questions, only 49% answered them correctly, meaning

Table 4. Percentage of respondents' correct answers from each aspect of skill.

No.	Skill Aspect	% score of correct answers	Interpretation category
1	Identifying claims and claim qualifiers	34%	Less
2	Identifying the type of data and its quality	57%	Enough
3	Identifying reason and its quality	45%	Enough
4	Showing rebuttal and counterargument	44%	Enough
	Average	49%	Enough

that 61% of the other answers were wrong. Thus, the average respondent's correct answer is only 6 to 7 questions. Of the four existing argumentation skill indicators, the indicator of identifying claims and the qualifier of claims is the indicator with the lowest percentage in the less category.

The low skill in identifying claims and qualifiers from claims indicates that students cannot read in-depth based on the author's point of view, or they may have a defensive argumentative style that tends to change claims (Probosari et al. 2019)—identifying claims requires the involvement of higher-order thinking skills (Viyanti et al. 2020) because claims are the main conclusions of the argument (Rapanta 2018). In setting a claim, it must also be followed by proof of data and reasons (Erduran & Kaya, 2016; Kahraman & Kaya 2021) so that this indicator becomes the primary indicator of scientific argumentation skills.

### 3.3 Correlation test results from test results of information literacy and argumentation skills of students

Arguing is a strategy to develop metacognitive skills and strengthen strategies to seek information (Reisoğlu et al. 2020). A one-party correlation test is carried out to analyze whether information literacy skills correlate with students' argumentation skills. The data from the correlation test results using SPSS are shown in Table 5.

Table 5. Correlation test data.

		Correlations	
		Information literacy skills	Science argumentation skill
Information literacy skills	Pearson correlation	1	.167*
	Sig (1-tailed)		.030
	N	128	128
Science argumentation skills	Person Correlation	.167*	1
	Sig. (1-railed)	.030	
	N		121288

\*Notes: Correlation is significant at the 0.05 level (1-tailed)

The results from the correlation test showed that a significance level of 0.03 means less than 0.05, which shows a correlation between information literacy skills and students' argumentation skills. The correlation coefficient (r) got a score of 0.167, meaning that the correlation coefficient is 0.01–0.20, with a very low or weak interpretation of the correlation.



The data from this test are all done using survey data; it is hoped that student's ability to use it will increase using their personal opinions and experiences (Watson et al. 2018).

#### 4 CONCLUSION

Based on the data obtained in this study, it can be concluded that the information literacy skills of pre-service science teachers at Unesa get an average of 80% with suitable criteria. The ability to organize information still needs to be improved. The argumentation skills of the four indicators also get an average score of 49% with enough criteria. The correlation test concluded that there is a relationship between information literacy skills and students' argumentation skills, with a shallow interpretation of the relationship.

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# Meta-analysis of learning media used in physics education as a learning medium during the pandemic period

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**ABSTRACT:** The use of technology as learning media played an essential role during the pandemic and post-pandemic era. This study aims to analyze learning media development to support learning activities during the pandemic and post-pandemic. This study used a meta-analysis method with a systematic review in three steps: searching, screening, and selecting to recommend the appropriate learning media used in the pandemic period. Online learning media is expected to be used by teachers and educators during the pandemic time. The reviews show from 11 of the 15 articles analyzed in this study; that online learning media has a significant effect of 0,513 on the students' performance in Physics. This study identified that subjects in Physics might have different effects when taught through online learning. Electromagnetics has a significant effect size of about 1,257. The results imply that technology used during pandemic changes how teachers and educators deliver their teaching material. Learning media based on Science, Technology, Engineering, and Mathematics (STEM) could be the answer. The literature shows that most learning media used during the pandemic are computer-technology-based. In brief, learning media used to teach Physics in the post-pandemic will depend on technology and teachers' skills for the effectiveness of the learning and teaching process. This study recommends training to prepare future teachers to overcome challenges in using technology-based media where teachers can upgrade their skills.

## 1 INTRODUCTION

The beginning of the Coronavirus (COVID-19) outbreak in Indonesia was recorded in March 2020. Every day the number of COVID-19 patients was increasing. At the end of 2020, around 719.219 people were confirmed positive, 589.978 people recovered, and 21.452 died (BNPB 2020). This situation made the government at the central and regional levels implement four policies, such as mask use, contact tracing, and self-isolation (Nurfurqon 2020). Impact of this policy issued new policies such as closing shopping locations, transportation, and educational institutions (Indriya 2020). As the number of COVID-19 patients decreased in 2021, the Ministry of Education, Culture, Research, and Technology of

Indonesia, has allowed schools to carry out a limited face-to-face learning process. However, it is still crucial for the education office and schools to ensure that learning of all students is safe, comfortable, and enjoyable.

Educational institutions must adopt the best learning strategy that keeps the learning process continuous. The teaching and learning process must optimize the delivery of material properly to maintain the quality of learning outcomes, including increasing students' motivation during the COVID-19 pandemic (Saifulloh & Darwis 2020). According to Royanda et al. (2022), online learning is considered the best solution during the pandemic. Online learning is a process carried out directly or indirectly through the internet. Every educational institution has started implementing online learning using Moodle-based e-learning, Google Classroom, Zoom Meeting, Google Meet, Quizizz, YouTube, and other applications. Several studies have stated that online learning can improve student learning outcomes during the pandemic (Adii et al. 2022; Priadi & Rianda 2021).

According to the learning process during the pandemic and post-pandemic, technology as learning media played an important role. Furthermore, in this millennial era, there are already a lot of digital technology-based media that are very sophisticated and interesting when used as learning media (Batubara et al. 2022). Learning media helps teachers provide teaching materials to students. It could make it easier for teachers to deliver information and be interesting for students. Educators must be able to choose learning media that suit students' needs and make exciting media so that the learning process runs effectively. There are a lot of learning media that have been developed through the pandemic. Therefore, this paper uses the meta-analysis method to analyze research on learning media development during the pandemic to support learning success in the post-pandemic era.

## 2 METHODS

This study reviewed the effect of learning media in physics learning in high school students after the pandemic regulation asking students to School from Home (SfH). Most Indonesian students are currently in the alpha generation and are highly interested in technology and adapting rapidly to globalization (Karlimah et al. 2021). This systematic review used the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) methodology (Liberati et al. 2009; Peixoto et al. 2021). This study consisted of data collection (searching, screening, and article selection) with qualifying criteria for inclusion. The articles samples related to physics education, learning media, critical thinking, and the pandemic era.

The first step of the data collection process was searching literature using two web databases, Google scholar and Educational Resources Information Center (ERIC), as these databases were recognized as reliable sources for scientific articles. The pandemic era was defined as early 2020, so the eligible study in this research were articles published in 2021–2022. Avoiding articles that are not related to our study, these are the keywords used in the first step, such as “Physics education,” AND “learning media,” AND “critical thinking,” AND “pandemic era.” Thirty-eight studies were retrieved from the Google Scholar search engine.

The next step was screening for articles that met the required inclusion and exclusion criteria. The criteria of inclusion that are used in the meta-analysis were: 1) articles must be written in English and from SINTA or Scopus-accredited journals; 2) articles must focus on learning media topics, including online learning or props media; 3) object samples are high school students; articles must include information about the purpose of the study, an application that was used, physics material, media type, The method of the study must include the number of samples and use the experimental type of study. Meanwhile, the exclusion criteria were non-English papers not accredited in SINTA or Scopus journals; non-learning media papers; junior high school and university students were their object samples; effect size not included.

There were about 41 studies included for further eligibility steps. After reviewing the complete text, 21 studies did not pass the criteria (exclusion), so 20 studies satisfied the inclusion criteria in this meta-analysis. Five studies had no effect size in their analysis method research. Finally, 15 studies were included in the further meta-analysis, containing effect size, two groups of samples: experiment and control group/class, and information about the effect of using learning media in physics education during the pandemic. These articles were analyzed. The effect size of those studies is analyzed using a descriptive statistical technique that calculates the effect size shown in Table 1 below.

Table 1. Indicator effect size.

Effect size	Category
$0.01 < \text{effect size} < 0.09$	Small
$0.09 < \text{effect size} < 0.025$	Medium
$\text{effect size} > 0.025$	Large

If the studies do not contain the effect size calculation but contain the data of the t-test as a comparative analysis, so the effect size can be calculated using the eta-square equation ( $\eta^2$ ), as shown in Equation 1 (Kadir 2017). After being calculated using Equation 1, the effect size criteria can be interpreted using Table 1 (Labibah & Jauhariyah 2021).

$$\eta^2 = r^2 = \frac{t_0^2}{t_0^2 + db} \tag{1}$$

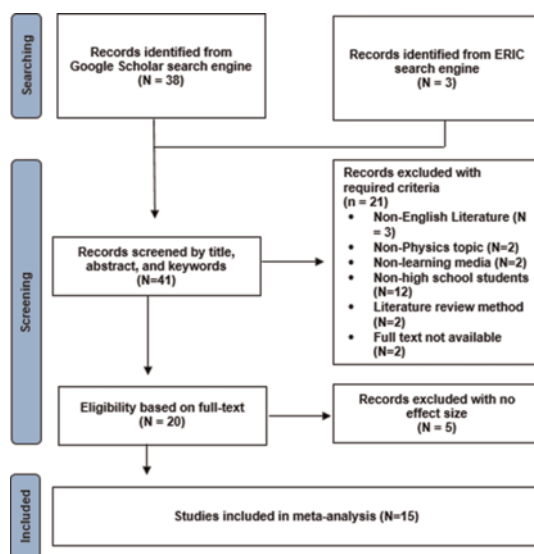


Figure 1. PRISMA flow diagram of data collection.

### 3 RESULTS AND DISCUSSION

Many adaptations have been made during and after the pandemic, including education and learning. Teachers, students, and parents must collaborate and adapt to new learning

activities that have never been done before. Teachers and students are required to be able to do distance learning without face-to-face using several technological devices. Teachers must present learning that is fun and meaningful. Teachers must use existing media and technology so students can still learn effectively and efficiently. The media and technology must increase students' understanding of the learning materials. Learning during a pandemic era tends to be boring because there is no interaction between teachers and students or students with other students. Therefore, many learning media have been developed aiming to make teaching and learning activities more varied and not monotonous.

Fifteen selected articles were reviewed and presented in the form of the table below by including the names, titles, sample size, and article code (Table 2).

Based on Table 2, the results of the reviewed articles indicated that learning media development during and after the pandemic is mainly in digital media or online media. The learning media developed is adapted to learning activities, namely digital media. Learning during and after a pandemic needs technology to support learning.

Table 2. Analysis of elements in the literature.

Literature Sources	Subject Materials	Media Types, Online/Offline	N*	Article Code**
Tania et al. (2020)	Mechanics	Application of Android-based. Online	70	1A
Lestari & Mansyur (2021)	Mechanics	PhET Simulation. Online	40	2A
Bani & Masrudin (2021)	Mechanics	Mobile learning/application. Online	53	3A
Blazer-Bacolod (2022)	Electrical	Simulation Laboratory (PhET). Online	50	4A
Dilmen & Atalay (2021)	Earth Science & Astronomy	Augmented Reality (AR). Online	62	5A
Desnita et al. (2022)	Earth Science & Astronomy	E-Module. Online	60	6A
Gusemanto et al. (2021)	Mechanics	Adobe Animate. Offline	70	7B
Damayanti et al. (2021)	Mechanics	Comic Android-Based. Online.	70	8A
Muliyati et al. (2022)	Others	Simulation. Online	65	9A
Pakpahan (2022)	Earth Science & Astronomy	Powerpoint and video-based. Online	62	10A
Şanlıtürk et al. (2022)	Others	Digital cartoon. Online	42	11A
Darmadi & Saehana. (2021)	Mechanics	<i>gasing</i> and boat toys. Offline	46	12B
Sa'diyah et al. (2020)	Others	Smartphone-based application. Online	61	13A
Labibah et al. (2021)	Earth Science & Astronomy	Android-based. It can be accessed offline	30	14AB
Mulhayatiah et al. (2019)	Electrical	Digital learning module. stored in the .exe format on CD and microSD Flash	60	15AB

Notes: \*N, sample size

\*\*A, Online Media; B, Offline Media; AB, Combine (Online and Offline Media)

During the pandemic and after the COVID-19 pandemic, research in the education field has been conducted to develop appropriate learning media that can support the Effectiveness of distance learning. Learning media development is expected to inspire students' enthusiasm for learning at home. Students are expected to be able to use appropriate technology to support their learning process. The development of these media can train students' ability to use technology effectively and be able to train students' abilities to solve the problems they face using technology they already know.

The effect size is being used to analyze the data from the articles that qualify the inclusion criteria so that the influence level of learning media for senior high school students in the pandemic era can be analyzed. The effect size of fifteen articles is shown in Table 3. The data was divided into three categories according to the magnitude of the effect size, as presented in Table 3. The results are that seven articles are categorized as having a significant effect size, three are a medium effect size, and five are categorized as having a small effect size. The average value of the effect size of all fifteen articles is 0,428, with a significant effect size category. These data results indicate that using learning media as a learning medium in the pandemic era significantly influences physics learning during the pandemic era.

Table 3. The effect size of fifteen articles.

No.	Code	Effect Size	Category	N
1.	4A	2,38888	Big	7
2.	1A	0,99576		
3.	2A	0,97373		
4.	11A	0,70862		
5.	6A	0,50520		
6.	8A	0,39500		
7.	12B	0,09031		
8.	3A	0,25017	Medium	3
9.	7B	0,13768		
10.	15AB	0,12595	Small	5
11.	5A	0,08520		
12.	13A	0,07202		
13.	9A	0,00003		
14.	14AB	0		
15.	10A	-0,30160	Big	15
Average		0,42846		

Table 4 presents the effect size of each type of learning media used. Three types of learning media are used, namely digital or online, traditional or offline and combined, and a combination of online and offline learning media types. The type of learning media that has a significant effect size category is digital or online learning media. It is because in learning during a pandemic, digital-type learning media are very widely used and developed. Online learning media is very suitable for learning during a pandemic because the learning media is

Table 4. Effect size based on learning media types.

No.	Learning Media Types	Effect Size	Category
1.	Digital/Online	0,513187	Big
3.	Traditional/Offline	0,113994	Medium
3.	Combine	0,06297	Small

easily accessible, easy to use, and very efficient in explaining the concept of material clearly. Online learning media developed in the analyzed articles use simulations, virtual labs, e-modules, and animations.

Learning media with traditional or offline types are still being developed and used for learning during a pandemic; the learning media has an effect size with a medium category. This combined (online and offline) learning media is less effective for learning during a pandemic. Learning during the pandemic uses much digital technology that is easier to use. The absence of face-to-face activities has resulted in combined learning media being less influential in learning during a pandemic.

Grouped skills that will be addressed in the research results, which include conceptual learning, critical thinking & problem solving, and learning outcomes in each article, are presented in Table 5. Each skill shows an effect size in the big category. It shows that the development of learning media used to support learning during a pandemic effectively improves student skills. Especially on conceptual learning skills, critical thinking & problem solving, and learning outcomes. Of the three skills, the one with the most significant effect size is conceptual learning. The learning media used to support learning during a pandemic can help students understand the concept of the material used. The concept of the selected material can be visualized and explained well through the developed learning media so that it can improve students' critical thinking and problem-solving skills. It can show that learning during a pandemic must still pay attention to the context and skills to be addressed. Student learning outcomes can be increased in the pandemic era.

Table 5. Effect size based on the results of fifteen articles' research.

No.	Results	Effect Size	Category
1.	Conceptual Learning	0,99576	Big
2.	Critical Thinking & Problem Solving	0,26444	
3.	Learning Outcomes	0,62727	

Grouped of the material used in the developed learning media of each article is presented in Table 6. The materials used are grouped into five scientific clusters: Electromagnetism, Earth Science & Astronomy, Fluid, Mechanics, and Optics, as well as other materials in the other group, including computational thinking and natural science. In Electromagnetism, Earth Science & Astronomy, Fluid, Mechanics, and others, the category of effect size is large, with the most significant effect size being in Electromagnetism. Electromagnetism is the most commonly used material. Electromagnetism is a material with a category that is difficult for students to understand because the material is abstract; an explanation is needed through visual and audio media. Learning media suitable for Electromagnetism material are media with simulation, animation, or virtual lab types. These learning media help students to

Table 6. Effect size based on subjects materials.

No.	Material	Effect Size	Category
1.	Electromagnetism	1,25742	Big
2.	Earth Science & Astronomy	0,09350	
3.	Fluid	0,09030	
4.	Mechanics	0,59112	
5.	Optics	0,07200	Small
6.	Others	0,35432	Big



understand the concept of electromagnetism material clearly and be able to conduct experiments or simulations through digital, traditional, or combination learning media. The Optics material has the smallest effect size category, which is 0.072. It shows that there is still a need to develop learning media that uses optics material as the media content.

The number of learning media developed to support learning during the pandemic shows that teachers are trying to be good facilitators. Teachers strive to develop interactive learning media to help students understand the material being taught when they do distance learning. These learning media can be used as learning support when learning activities are expected in the classroom. Learning media development is very important because not all material in physics learning can be explained orally by the teacher. The material delivered through animation, simulation, or virtual lab will provide a valuable learning experience for students because students can see the material in real and it can improve students' conceptual, critical thinking, and problem-solving abilities.

The technology used during the pandemic changes how teachers and educators deliver their teaching material (Winarti et al. 2021). Physics teaching material containing theoretical and mathematical concepts requires a specific strategy to help students understand the physics concepts. Learning media based on science, technology, engineering, and mathematics (STEM) could be the answer (Amiruddin et al. 2022a, 2022b; Diansah et al. 2021).

The result implies a better understanding of learning media's effectiveness during the pandemic. After two years of applying technology as a medium, teachers and students will use the technology for better purposes, such as learning, browsing the materials, and taking online classes. The mobile application can be easily accessed by students anywhere, and there is no limited time to access it. According to Table 5 (Budiarti et al. 2022; Ismail et al. 2021; Nissa & Dheanti 2022), learning media increases students' understanding and critical thinking skills, and encourages students to have an awareness for thoughtfully using technology.

#### 4 CONCLUSION

The meta-analysis study of learning media in Physics education concludes that learning media in pandemics was developed for online learning. From the findings above, 11 studies analyzed that most teachers and educators who taught Physics education in a pandemic era used online learning media, such as virtual laboratories, digital cartoons, mobile learning education, simulation, and digital learning. Online learning has a significant effect which is 0.513. It is also known that Electromagnetics has a significant effect size of about 1.257.

In brief, learning media used to teach Physics in the post-pandemic will depend on technology and teachers' skills for the Effectiveness of the teaching and learning process. This study recommends training to prepare future teachers to overcome challenges in using technology-based media where teachers can upgrade their skills. Research and development in learning media based on STEM still have a broader opportunity to be evolved.

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## Contribution of Science Writing Heuristics to students' argumentation skills in learning science

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**ABSTRACT:** This study aims to describe the Science Writing Heuristic (SWH) research pattern in physics education based on the Scopus database. The method used is bibliometric analysis with the VOSviewer application and data processing with Microsoft Excel. The data are taken from Scopus metadata in the last twenty years, from 2012 to 2021. The analysis shows that the last ten years of research concerted on the components of the SWH (first cluster), the material tested on the SWH (second cluster), the argumentative component of the SWH (third cluster), the heuristic component of the SWH (fourth cluster), the SWH learning model (fifth cluster). The last two clusters are only a complement to the keywords of SWH. This research focuses on how to use SWH as effectively as possible in physics education. The SWH approach can enhance the capabilities of scientific processes in laboratories. The findings of this study can help related researchers to recognize SWH trends in physics education research overall and suggest directions for further investigation.

### 1 INTRODUCTION

In the industrial era 4.0, one of the goals of education is to supply superior human resources who can adapt to the needs of the 21st century and the challenges of technological development. Argumentation is a unique skill and critical activity in scientific exploration relevant to realizing educational goals in the industrial era 4.0 (Paramita et al. 2021; Osborne et al. 2004). It strengthens claims through critical thinking analysis based on evidence and logical reasons (Irvan & Admoko 2020). Argumentation plays an essential role in physics learning activities. Students who study physics simultaneously can defend or refute existing ideas when practicing the scientific method (Ishaq et al. 2021). Those with a higher mathematical argumentation ability are hoped to have a better ability to provide solutions or answers to the given problems (Fatmawati et al. 2018).

Previous research conducted by Mubarok et al. (2016) mentions that the students' argumentation ability in learning physics needs to improve due to its process that has yet to be directed the students to engage actively. Sudarmo et al. (2018) stated that the argumentation ability in thermodynamic physics learning is still low. It is because their argumentation skills are rarely trained. In addition, the low argumentative ability can negatively impact the students, such as being less able to solve contextual problems, low scientific reasoning abilities, limited ability to express thoughts in written form or arguments, and creativity in solving problems.

The argumentation ability requires a bridge for teachers and students to get used to arguing. One approach that can be trained is the SWH approach developed by Brian Hand. The SWH approach guides the students to think inquiry (Erkol et al. 2010). The steps in the student's SWH approach are carried out with negotiation and exploration phases to understand various empirical findings to find a concept. Claims in arguments are made based on observations, so students can develop the broadest possible investigation to find

data and evidence. The SWH approach can help students by giving reasons so that students can turn evidence into claims (Hand et al. 2018). This evidence can be used as a reference to accept or reject the claim. The SWH learning model includes guidance that supports and encourages the students to think and give reasons related to the data. The SWH template can help students generate their questions, claims, and evidence to make valid arguments (Akkus et al. 2007). Therefore, research on SWH needs to be developed to assist students in increasing argumentation.

This research is expected to provide information related to the development trend of SWH research methods in physics education. Specifically, this research is conducted by: 1) reviewing document output and document source productivity; 2) reviewing the distribution of state and institutional publications; 3) analyzing top journal publishers, languages, and subjects in SWH research; 4) identifying the top 10 research citations in keywords SWH; 5) identifying research trend of visualization results 6) reviewing the Scopus database with keywords SWH in physics education.

## 2 METHOD

This research was conducted using a literature study with previous studies that have been carried out. The data obtained were then processed using the bibliometric analysis method. Bibliometric analysis is a technique that provides a macroscopic overview. Meanwhile, the method can be used to assess the performance and research patterns of authors, journals, countries, and institutions and to identify and measure collaboration patterns among them (Li & Zhao 2015). The research was conducted in April-June 2022 with the keywords Science Writing Heuristic. Metadata with .ris format is processed using the VOSviewer application and then analyzed using Microsoft Excel to obtain data in the form of diagrams in Figure 1.

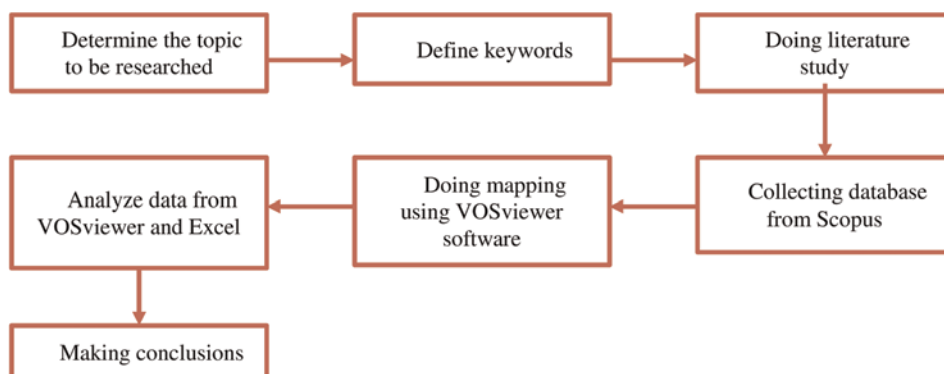


Figure 1. Research steps with bibliometric analysis. (Prahani et al. 2022).

## 3 RESULTS

### 3.1 Document output productivity and document source

The number of research publications regarding SWH in the top ten years from 2012 to 2021 is represented in Figure 2. The figure shows that there is an increase and decrease every year. The highest number of publications occurred in 2020, which were counted as 17 publications. The SWH learning model is an argument-based inquiry approach developed to facilitate science learning from laboratory activities accompanied by written and oral



Figure 2. Number of citations from 2012–2021.

arguments (Hand 2004). According to (Nam et al. 2011), the SWH learning model is carried out in semi-structured writing that sharpens students’ reasoning related to laboratory investigations. The lowest publication occurred in 2014, with six publications. However, the most significant decline occurred from 2020 to 2021, which decreased by nine publications. One of the factors that influenced this decline was the study of home situations due to the lockdown during COVID-19 situations (Rice et al. 2020).

The types and sources of SWH research documents were obtained in the last ten years. After mapping the documents, it is found that there are 121 journals, 15 conference proceedings, 13 books, and five book series.

### 3.2 Distribution of state and institutional publications

Based on the identification of the documents from various countries, the United States leads the publication with 76 documents. Furthermore, there are other top five countries with the most publications, namely Turkey, South Korea, Indonesia, France, and the United Kingdom, with 16, 11, 7, 7, and 6. The number of SWH documents in the institutions can be seen in Table 1. The most dominating publication is from the US.

Table 1. Affiliations from around the world.

Affiliation	ΣDocument
The University of Iowa, (US)	32
Lowa State University, (US)	12
The University of Louisville, (US)	6
Atatürk Üniversitesi, (Turkey)	5
Arizona State University, (US)	5
Kent State University, (US)	5
Universitas Pendidikan Indonesia, (Indonesia)	5
Binghamton University State University of New York (US)	4
Bozok Üniversitesi, (Turkey)	4
TED Üniversitesi, (Turkey)	4

### 3.3 Top journal publishers, languages, and subjects in SWH research.

Scopus shows the highest journal publishers, dominant publication languages, and subject areas in the top ten (Table 2). The table shows that the journal publishers who dominate

Table 2. Top ten journal publishers, languages, and subjects.

Top Source Title	Total	Language	Total	Top subject area	Total
Research In Science Education	12	English	133	Social Sciences	107
International Journal of Science Education	8	French	6	Arts and Humanities	41
Journal Of Chemical Education	7	Turkish	6	Computer Science	19
Journal Of Physics Conference Series	5	Korean	3	Chemistry	18
Chemistry Education Research and Practice	4	Spanish	3	Mathematics	9
International Journal of Science and Mathematics Education	4	Czech	2	Physics and Astronomy	7
Journal of the Korean Chemical Society	3	Italian	2	Psychology	7
The Learning Sciences the Future of Learning Acls 2012 Proceedings	2	Portuguese	2	Engineering	6
Educacion Quimica	2	Slovak	2	Biochemistry, Genetics and Molecular Biology	4
Elementary Education Online	2	Russian	1	Chemical Engineering	4

journal publishing are Research in Science Education, with 12 articles. The most dominating language is English, which is dominant in the country with the highest publication, namely the US. The subject area that dominates is social science, with a total of 107.

### 3.4 Top 10 research citations in keywords SWH

Prolific writers who dominate the SWH research topic are Hand B, as shown in Table 3. In this table, Hand B is found in three articles as the top ten most cited articles. It indicates that Hand B is the most active writer in writing this SWH topic. The works in the citation published in Scopus are represented in Table 3.

Table 3. Top authors, sources, and citations in SWH keywords.

Authors	Sources	Citations
Hand et al. 2004	International Journal of Science Education 26(2), pp. 131–149	132
Reynolds et al. 2012	CBE Life Sciences Education 11 (1), pp. 17–25	110
Akkus et al. 2007	International Journal of Science Education 29(14), pp. 1745–1765	109
Martin & Hand 2009	Research in Science Education 39 (1), pp. 17–38	105
Atkinson 2003	Journal of Second Language Writing 12 (1), pp. 3–15	96
Burke et al. 2006)	Journal of Chemical Education 83(7), pp. 1032–1038	87
Greenbowe et al. 2007	Journal of Chemical Education 84(8), pp. 1371–1379	85
Hand & Choi 2010	Research in Science Education 40(1), pp. 29–44	78
Hohenshell & Hand 2006	International Journal of Science Education 28(2–3), pp. 261–289	74
Matsuda 2003	Journal of Second Language Writing 12(1), pp. 65–83	70

Data analysis on the VOSviewer software also shows that Hand B is the most active writer on the SWH topic. The visualization shows a large circle that signifies the author's dominance over the others (Figure 3). The color in the visualization results in VOSviewer indicates the year of publication of the article by the author.

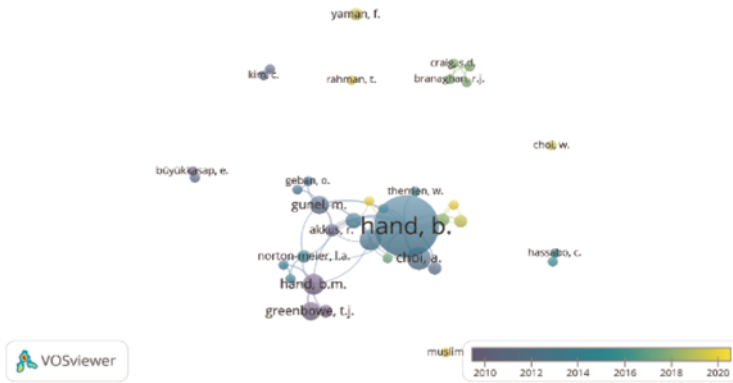


Figure 3. Authors' visualization in VOS viewer.

### 3.5 Research trend mapping visualization results

The 154 documents related to the SWH keyword in the Scopus database were visualized with VOSviewer, as shown in Figure 4. The circle in the visualization represents the number of citations that appear in the keyword. The larger the circle is, the more publications are cited. The distance of the nets in each circle shows the relationship and similarity between keywords. Smaller net spacing between publications indicates a stronger relationship and higher similarity between keywords. Circles of the same color have similar topics in publications. The mapping results show 7 focus clusters for the SWH research topic.

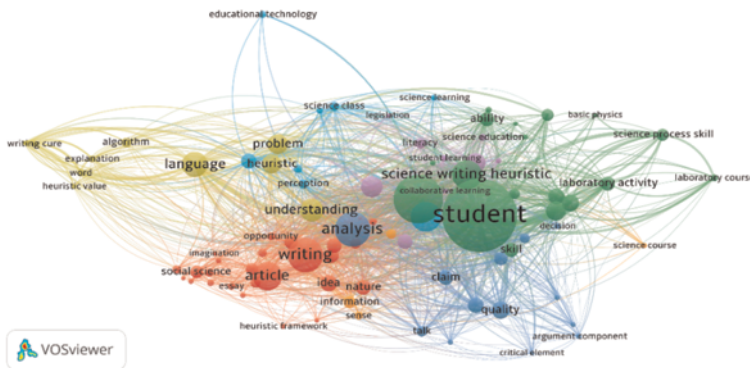


Figure 4. Visualization of SWH keywords in VOSviewer.

The first cluster, with a red code of 26 items, focuses on components of SWH, such as communication, observation, imagination, writing, attention, and article. The second cluster in green, with a total of 19 items, focuses on the material tested in SWH, such as science, fundamental physics, chemistry, mathematics, and natural science. The third cluster in blue, with a total of 13 items, focuses on the argumentative components of the SWH, such as claim, analysis, decision, and talk. The fourth cluster in yellow with 11 items focuses on heuristic components in SWH such as explanation, heuristic, heuristic value, expressive writing, writing cure, and word. The fifth cluster, with a total of 9 items and a purple color code, focuses on SWH learning models such as collaborative learning, classroom, and student learning.



Based on the VOSviewer results, more specific keyword icons have interrelated relationships. Keyword mapping from VOSviewer in the student keyword has become dominant in VOSviewer visualization in the last ten years. This keyword is relevant to several studies by Cavagnetto et al. 2010; Erkol et al. 2010; Hand et al. 2018; van Nunen et al. 2018) by testing the SWH approach on students. This VOSviewer visualization can show related relationships between one keyword and another. Figure 5 shows that SWH (Science Writing Heuristic) is related to various clusters, namely writing from the first cluster, science process skills from the second cluster, claims from the third cluster, heuristics from the fourth cluster, and literacy from the fifth cluster.

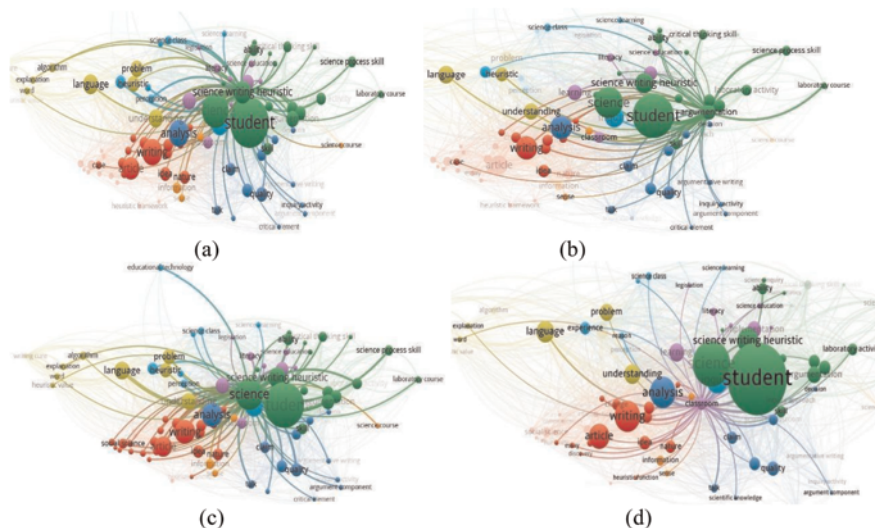


Figure 5. Keyword icon visualization (a) SWH, (b) Argumentation, (c) Science, (d) Classroom in VOSviewer.

According to Yaman (2018), the SWH approach is an argument-based inquiry approach. This keyword is in line with the visualization of VOSviewer, which shows a large circle of argumentative keywords (Figure 6). The existence of the SWH approach in learning has intended the students to make their own questions and claims and prove their questions so that the arguments are valid (Hand et al. 2004).

In addition, it is the same with the keyword science with a large and dominant visualization (Figure 5) and related to several studies by Cavagnetto et al. 2020; Hand et al. 2018; Lamb et al. 2021; Ulu & Bayram 2015 that apply the SWH learning model in science classrooms.

### 3.6 Scopus database overview with keywords SWH in physics education

Science studies the natural world, not only physics but also chemistry and biology, which shows the physics keyword in its visualization (Figure 6). The small circles in the fundamental physics visualization indicate that there is still an opportunity to research physics on the topic of SWH (Erkol et al. 2010). It significantly improves conceptual understanding and attitudes toward understanding laboratory concepts and students' attitudes towards physics laboratories. In addition, research from (Ridhwan et al. 2021) mentions that SWH is also applied in laboratory activities of basic physics I learning process in the form of worksheets. Newness can be found based on the mapping results, namely by looking at the relationship between keywords that are less.

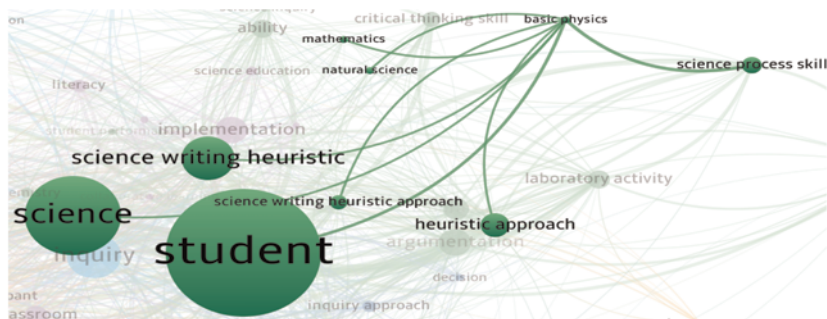


Figure 6. Visualization of basic physics keywords in VOSviewer.

#### 4 CONCLUSIONS

This study is the first one to be conducted using bibliometric analysis. It is also the first study that reviews the top cited publications on SWH over the last ten years using the data based on scopes and the VOSviewer application. Based on the result, it can be concluded that the highest research on SWH occurred in 2020. The US publishers have the most SWH documents with the top six affiliates. Visualization of research trends resulted focused on the components of SWH (first cluster), the material tested on SWH (second cluster), the argumentative component of SWH (third cluster), the heuristic component of SWH (fourth cluster), the SWH learning model (fifth cluster).

Meanwhile, the last two clusters were only provided as a complement to keywords from SWH. This research started from the theoretical discussion of SWH on how to apply it in physics education. The SWH approach can improve laboratory and scientific process capabilities. The findings of this study can help related researchers to recognize SWH trends in physics education research globally and suggest directions for further research.

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