

# Universal design for learning as an inclusive teaching methodology for an African art and culture course in Ghana

Dickson Adom<sup>1</sup>

<sup>1</sup>Department of Educational Innovations in Science and Technology,  
Kwame Nkrumah University of Science and Technology, Ghana  
E-mail: dickson.adom@knust.edu.gh/adomdick2@gmail.com

## Abstract

Ensuring inclusivity in a highly diverse higher education classroom has been a challenge in many higher education institutions globally. In a highly diverse classroom, there is a need to ensure and sustain inclusivity where all learners feel respected and regarded as an important part of the teaching and learning activities. The universal design for learning framework has been empirically proven to be an inclusive pedagogy that ensures high inclusivity amidst the diversity in the makeup of learners. This convergent parallel mixed method study investigated the potential in ensuring inclusivity while improving the learning processes and learning outcomes of second-year students studying the Introduction to African Art and Culture course by designing the course to be UDL compliant. Data for the study were garnered from 120 students of the course via the UDL Observation Measurement Tool (UDL-OMT) and an adapted version of the ITSI-S Experience in Classroom (EIC) Questions of the ITSI-S. The results of the study revealed that UDL and its three key principles of multiple means of representation, multiple means of engagement as well as multiple means of action and expression were satisfactorily observed in the Introduction to African Art and Culture course. Also, it was evident in the findings that UDL's Implementation ensured high inclusivity while reflecting positively on the learning processes and learning outcomes of all the students who read the UDL-designed course. The study contends that UDL is an important inclusive teaching methodology that should be adopted by teachers in their quest to maintain a high level of inclusivity in a highly diverse classroom.

## Author Keywords

African art and culture course; inclusivity; higher education; teaching methodology; universal design for learning

## Introduction

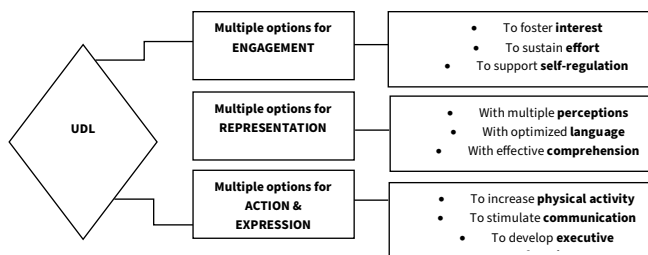
Higher education institutions are increasingly becoming highly diverse (Koutsouris et al., 2020) due to the differences in the makeup of students such as personality traits such as academic, intellectual, and emotional background, age, gender, learning styles (Gried-Reed & Williams-Wengerd, 2018) as well as the current argument of internationalizing higher education institutions (Pineda & Mishra, 2022). Diversity in the study context agrees with the view of Dei and Asgharzadeh (2005)

as the differences in the makeup of students that could be barriers to students' learning, including but not exhaustive, religion, culture, gender, age, language, etc. The high diversities in the student population often result in stereotyping, labeling, social exclusion, and segregation which are giant hurdles to achieving equality and equity in higher education institutions (Verdugo-Castro et al., 2022). The one-size-fits-all curriculum design and approach to education cannot address the differences in the makeup of students in higher education institutions (Kay & Hunter, 2022). To surmount the challenges that result from student diversity, there have been recent calls for instructors in higher education institutions to embrace inclusive pedagogical curriculum designs and methods (Pirchio et al., 2022; Woodcock et al., 2022). Since the Salamanca Statement and Framework for Action on Special Needs Education in 1994, the need for ensuring inclusivity, which is ensuring that every student has an equal opportunity to achieve educational success irrespective of their diversity, while removing any potential barrier to their educational achievement (Nasri et al., 2021; Butakor et al., 2020), has been echoed strongly, especially in the higher education context (Hernandez-Torrano et al., 2020). This call has been reiterated in the 2030 Sustainable Development Goal 4 on Quality Education which places a premium on inclusive and equitable education as the fluid for connecting and bridging the gaps within and between societies. Inclusive pedagogy in the higher education context is understood by inclusive education scholars in three main ways (Gale et al., 2017; Moriña, 2020). First, inclusive pedagogy holds the belief that every student is special and has unique values that could be brought to the learning environment. Second, an inclusive pedagogical curriculum design values diversity and strives to provide access for all students while creating an enabling learning environment where students feel highly motivated and engaged. Lastly, inclusive pedagogy aims at actions that foster a cohesive society that connects students with their communities. One of the highly endorsed inclusive pedagogical frameworks in recent years that aim at accommodating the diversity of students while fully advancing the global agenda of inclusive education is the Universal Design for Learning (UDL) (Adom, 2022; Nasri et al. 2021).

Universal Design for Learning (UDL) is a theoretical framework that embraces student diversity and ensures that learning



content is made accessible for all learners (Roski et al., 2021) by tactfully removing or reducing to a considerable degree, all potential barriers to education when designing and delivering courses (Burgstahler, 2021). UDL capitalizes on the diversity of students and offers options for students in engagement, content representation as well as actions to elicit their understanding of the learned content (Basham et al., 2020). As a flexible pedagogical framework, UDL provides an accessible learning environment that seeks to address student diversity to achieve high-quality education (Griful-Freixenet et al., 2020). It is not surprising that UDL has gained much popularity across education systems worldwide in its quest of creating inclusive classrooms (Capp, 2017; Landin & Schirmer, 2020). The UDL framework was designed by the Centre for Applied Special Technology (CAST) in the mid-1980s with the sole objective of offering choice and flexibility in the curriculum and pedagogical designs to cater to students' variability (CAST, 2018). The framework consists of three key principles, nine guidelines, and 31 checklists. The UDL framework pivots on three key principles that target multiplicity in the dispensation of teaching and learning activities (Figure 1). These principles are evidence-based and are driven by neuroscience and educational psychology theories (Adom, 2022).



**Figure 1.** UDL Framework  
Source: Ismailov and Chiu (2022)

The first UDL principle is offering multiple means or options for engagement that aims at helping diverse students to be able to find their pathway to the learning experiences offered by the instructor (Craig et al., 2019). This flexibility demonstrated by the instructor is targeted at fostering the interest, boosting the level of engagement and motivation for the students, sustaining their learning efforts, and supporting the self-regulation of their learning while making them active partakers in the teaching and learning processes in the classroom (Meyer et al., 2014). The second UDL principle is providing multiple means for representation. It concerns itself with the provision of learning content in a greater variety of methods, media, and formats to maximize accessibility (Flood & Banks, 2021). This variability in accessing the learning content in plural formats brings in multiple perceptions and heightens the comprehension of students. The third UDL principle is providing multiple means of action and expression. It offers choice and flexibility in ascertaining the understanding levels of students. Thus, it offers multiple means of assessment (formative and summative), varying means of assessment formats, choices in assignments, and formats of presenting them with accompanying comprehensive rubrics to increase students' participation, lubricate their communication with instructors, and aid in developing their executive functions (Ismailov & Chiu, 2022; Fitzgerald, 2021).

Over the years, the Ghana government through its education ministries has demonstrated its commitment to promoting the inclusive education agenda by developing an inclusive education policy in 2015. Also, the Ghana government is a signatory to all the international conventions that drive the inclusivity of all students toward achieving educational goals such as The Universal Declaration of Human Rights (UDHR), 1948; The Convention on the Elimination of all forms of Discrimination Against Women (CEDAW) 1979; World Declaration on EFA (1990), The Millennium Development Goals, 2000; United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) (2006); and International Covenant on Economic, Social and Cultural Rights (Swanzy et al., 2019). Inclusive education researchers in Ghana have responded greatly to the calls for equity and equality in education at all academic levels in the country (Botts & Owusu, 2013; Ametepee & Anastasiou, 2015; Deku, 2017; Opoku et al., 2017; Asamoah et al., 2022; Gomda et al., 2022). Though UDL has gained considerable popularity in educational institutions globally, its voice in the Ghanaian education context is very minimal. Few attempts have been made by authors to offer a conceptual understanding of it and how it could be implemented in education settings in Ghana (Deku, 2017; Adom, 2022). However, empirical studies aimed at implementing UDL to ascertain its impact on the learning processes and outcomes of students are rare. Thus, the overarching purpose of this study was to redesign the African Art and Culture course in the principles of UDL to offer empirical insight on how UDL could be actualized in Ghanaian higher education classrooms to accommodate student variability to achieve the country's education agenda of ensuring an inclusive higher education ecosystem. Specifically, this practice-based UDL implementation study aimed at measuring the UDL implementation in the Introduction to African Art and Culture class in tandem with the three key UDL principles using the UDL Observation Measurement Tool (UDL-OMT) developed by Basham et al. (2020). Aside from this, the study investigated the impacts of UDL on the learning processes and outcomes of the students who opted to study the Introduction to African Art and Culture course using the using adapted version of the ITSI-S Experience in Classroom (EIC) Questions which is the last set of questions of the ITSI-S (Celestini et al., 2021).

## Methods

### Research Design and Data Analysis Plan

The convergent parallel mixed methods design that aims at collecting and analyzing both quantitative and qualitative data sets was used for the study to get a more comprehensive understanding of how UDL impacted students learning processes and learning outcomes. The quantitative data that measured the level of UDL implementation using the UDL Observation Measurement Tool (UDL-OMT) was analyzed in descriptive statistics using the SPSS for Windows Version 26.0. On the other hand, the qualitative data collected using personal interviews were thematically analyzed using NVivo 12 software.

### Study Participants

Participants for the study were second-year university students (N = 40) out of the total population of 157 students who enrolled in the Introduction to African Art and Culture

course for academic purposes in the first semester of the 2021/2022 academic year at the Department of Integrated Rural Art and Industry, Faculty of Art in the Kwame Nkrumah University of Science and Technology, Ghana. The study participants were selected via a convenient sampling design based on their availability and willingness to enroll in the study. An informed consent form that explained the nature of the study, as well as its voluntary nature and conformance to research ethical procedures, was agreed upon and signed by all the study participants.

### Data Collection Instruments

The UDL Observation Measurement Tool (UDL-OMT) is a 42-item assessment tool designed by Basham et al. (2020) to measure the level of UDL alignment within an instructional environment or experience. All the items in the UDL-OMT are aligned with the UDL principles and guidelines by CAST (2018). It was designed to identify places in a lesson delivery where specific UDL checkpoints within the three key principles were observed. The individual items are scored using a scale of 0 (no evidence of UDL), 1-1.74 (Pre-emergent of UDL), 1.75-2.4 (Emergent of UDL), and 2.5-3.00 (dynamic and interactive, UDL observed). The instrument has been validated by Basham et al. (2020) in their study with an internal reliability Cronbach's alpha score above .80, (Good) and internal consistency with Cronbach's alpha score above .90 (Excellent). The UDL-OMT measures an alignment of UDL implementation in a class within the context of four sections below:

- (a) *introducing and framing new material (six items),*
- (b) *content representation and delivery (nine items),*
- (c) *expression of understanding (seven items), and*
- (d) *activity and student engagement (nine items)*

Aside from the scale for the scoring, the UDL-OMT offers observers of the lesson an opportunity to write down comments on their perceptions of the implementation of UDL during the lessons observed. In this study, only sections b-d (consisting of 25 items) were used to evaluate UDL implementation in the Introduction to African Art and Culture course because they were deemed closely knit with the three key UDL principles that were of interest in the study. A total of 12 lessons were observed by two persons trained in UDL and oriented on how to use the UDL-OMT instrument. The scorings were done independently by the two observers as recommended by Basham et al. (2020) to ensure the validity of the scores (Schutt, 2018). They were compared and analyzed together quantitatively. Also, the views of the students on how the UDL-designed course impacted their learning processes and outcomes were garnered using an adapted version of the 14 items on the ITSI-S Experience in Classroom (EIC). The instrument uses open-ended questions aimed at finding out evidence in the delivery of the lessons that show compliance with the UDL principles and how students' learning was impacted by them. Each personal interview with the 40 students took roughly an hour. The interviews were audio recorded, transcribed, and interpreted. Member checking was used to validate the transcribed data before the analysis.

### Results and Discussion

Table 1 indicates the average score of individual items of UDL as observed in the Introduction to African Art and Cul-

ture course according to the three UDL principles. Concerning Content Representation and Delivery (Multiple Means of Representation), UDL was highly observed indicating that students relied less on teacher dependence and had more control over the use of instructional tools and/or strategies because they were customizable, interactive, dynamic, and highly conformed to student variability. Students experienced/or used at least two or more instructional strategies and/or tools in accessing course materials, demonstrated understanding, took action, or engaged actively in the course activities. The items *supports understanding of relationships across disciplines, settings, or concepts* and *Clarifies content-based syntax and structure* had a score between 2.08 and 2.25, which indicates emergence of UDL. This implies that the instructor often tried to link discussions in the Introduction to African art and culture course to disciplines such as geography, archaeology, religious studies, and social history. The instructor made some efforts to discuss some content-based syntax and structures within the art theory. Students were helped to bring in knowledge from those disciplines to make affirmative decisions during class discussions but in other lessons, this was fairly observed. The qualitative views from the students affirmed that the multiplicity in content representation and delivery impacted positively on their learning processes and learning outcomes as it enhanced accessibility and student engagement while fostering understanding of the content:

'The course materials were highly accessible in different formats, helping us to learn in the learning styles we preferred. They were even on our social media platforms (IRAI-12), 'It made the class more interactive and we understood the course content well (IRAI-21).'

These results confirm earlier studies that though the efforts put in ensuring multiplicity in content representation require more time and planning (Singleton et al., 2019), it improves students' understanding of the course content and improves their learning processes and outcomes (Ferguson, 2019; Burgstahler, 2021).

With regard to Expression of Understanding (Multiple Means of Action and Expression), in five (5) out of the seven (7) items, UDL was observed. The average score of the five items was between 2.63 and 3.00. This indicates that the instructor offered plural media, tools, opportunities, and formats for assessment or for students in demonstrating their knowledge and understanding of the learned content. Efforts in supporting and monitoring the learning progress of students were provided by the instructor. However, two (2) items of Multiple Means of Action and Expression showed the emergence of UDL. These include *providing options that guide students to plan, develop strategies, and/or goal-setting that promotes expression of understanding* ((2.17) and *the environment facilitates the management of information and resources to achieve desired learning outcomes* (1.96). These two items of this UDL principle were not fully observed according to the UDL-OMT, the instructor did his best by always being present to offer clarifications whenever there was any form of confusion, especially on the students' platform and in class. Again, though the learning environment was inclusive and the climate was supportive in most cases, it was observed that the physical space was not too encouraging for the large class of over 150 students. How-

**Table 1.** The Average of the combined score of UDL Principles using the UDL-OMT in the Introduction to African Art and Culture Class

	Mean score	Scale
<b>Multiple Means of Representation</b>		
Presentation of information allows for customization	2.88	UDL Observed
Instruction allows alternatives for the visual display of information	2.96	UDL Observed
Instruction allows alternatives for auditory information	2.92	UDL Observed
Supports options for multiple languages	2.96	UDL Observed
Supports multiple levels of content understanding	2.96	UDL Observed
Supports understanding of relationships across disciplines, settings, or concepts	2.25	Emergent of UDL
Clarifies content-specific vocabulary, symbols, and jargon	2.96	UDL Observed
Clarifies content-based syntax and structure	2.08	Emergent of UDL
Highlights options for self-directed clarification of vocabulary and symbols	2.91	UDL Observed
<b>Multiple means of Action and Expression</b>		
Allows option for learners to express understanding in a variety of ways	3	UDL Observed
Provides access to a variety of tools and/or technologies for students to express their understanding	3	UDL Observed
Build competencies in the use of multiple options for expressing their understanding	2.63	UDL Observed
Intentionally provides support for students' problem-solving and critical-thinking abilities	3	UDL Observed
Provides options that guide students to plan, develop strategies, and/or goal-setting that promotes expression of understanding	2.17	Emergent of UDL
The environment facilitates the management of information and resources to achieve desired learning outcomes	1.96	Emergent of UDL
Facilitates student self-monitoring of progress	2.75	UDL Observed
<b>Multiple Means of Engagement</b>		
Promotes learner choice and self-determination while engaging with the content	3	UDL Observed
Provides a variety of activities relevant to all learners	3	UDL Observed
Promotes sustained effort and focus	2.58	UDL Observed
Encourages learners' use of strategic planning to complete instructional tasks	3	UDL Observed
Encourages collaboration and communication among learners	3	UDL Observed
Supports multiple levels of challenge	3	UDL Observed
Provides for self-reflection and self-assessment	3	UDL Observed
Provides formative progress monitoring and content checks	2.42	UDL Observed
Provides closure that reiterates big ideas and instructional purposes	2.83	UDL Observed
Note: The individual items are scored using a scale of 0 (no evidence of UDL), 1-1.74 (Pre-emergent of UDL), 1.75-2.4 (Emergent of UDL), and 2.5-3.00 (dynamic and interactive, UDL observed).		

ever, attempts were made to reach out to all students while offering ways of managing learning resources effectively. The students remarked during the qualitative interviews that there was freedom and flexibility in expressing their understanding without any form of intimidation:

'We do receive prompt feedback from the instructor anytime we expressed our understanding of the learned content in class or on our virtual platforms. When we express our understanding and it is not right or true he does not bring us down. He commends you and tells you that you should have done it this way or that way, he shows you the right path in doing it and that is very good. That is how I feel like I'm learning and he won't bring me down when I'm wrong but show me the correct way to address it (IRAI-27).'

The prompt, constructive, and supportive feedback from the instructor was a great form of motivation for students' learning as Roski et al. (2021) similarly observed in their study.

In terms of Activity and Student Engagement (Multiple Means of Engagement), UDL was observed in all nine items. The mean score ranged from 2.42 to 3.00. The instructor offered the students multiple means of engaging by providing different formats of the learning content as well as making them available on a variety of platforms to meet their learning pathways. It was observed that in class, the instructor was going around, taking note of the facial expressions of students to ascertain their level of understanding or confusion and offering immediate remedial aid by giving such student(s) special attention. There were times he used icebreakers such as songs, rhymes, and short hilarious activities to eradicate or reduce students' anxiety while embarking on projects in class and to rekindle their interest in the activity carried out in class if they were feeling bored or tired (especially in the afternoon classes). These approaches adopted by UDL-designed courses were found to be highly motivated students in the studies by Mayes (2020) and Dalton (2017). Also, the instructor gave students a template timetable and comprehensive rubrics to aid them in strategically planning all their assigned individual and group projects. He assured the students of his assistance in helping out with their projects so that they could stay within the timelines he had given them. Moreover, the instructor was not very strict with the deadlines for completing and submitting instructional tasks. There were times he gave extensions of the time for the entire students when other unforeseen occurrences disrupted the academic calendar, and when students collectively pleaded for extensions due to assignment loads from other courses. Individualized extensions in submission dates were issued for students with peculiar challenges (such as those with learning challenges, those with health and emotional challenges, etc.) and many more. The qualitative views from the students affirmed the observations made:

'The lecturer creates a climate that respects the diversity of students and this makes me push and go on to do better (IRAI-09)', 'I feel motivated to learn because it allows me to learn in any way or the way I feel comfortable to learn and the way I want it and it boosts my academic performance (IRAI-01)', 'The lecturer is approachable even when he does not have a class with us he still does interact with us on our social media pages (IRAI-25)', 'Usually when lecturers come to class we do not normally pay attention in class but with this UDL-designed course, all of us get highly engaged (IRAI-13).'

Table 2 shows the average of the combined score of the three UDL principles used by the instructor in the classroom. The

**Table 2.** The Average of the combined score of UDL Principles using the UDL-OMT in the Introduction to African Art and Culture Course

	Average of the combined score
Multiple Means of Engagement	2.87
Multiple Means of Representation	2.76
Multiple Means of Action and Expression	2.64

Note: The individual categories are scored using a scale of 0 (no evidence of UDL), 1-1.74 (Pre-emergent of UDL), 1.75-2.4 (Emergent of UDL), and 2.5-3.00 (dynamic and interactive, UDL observed).

three categories of UDL principles were identified to have scores between 2.64 and 2.87 (see Table 2). The classroom that scored in the range of 2.5 to 3.00 was characterized as having UDL observed or dynamic, interactive UDL, where the application of the principles of UDL was obvious and consistently applied during the observations.

## Conclusion

This study measured the extent to which an Introduction to African Art and Culture course implemented the three key principles of UDL as well as the impact of UDL on the learning processes and learning outcomes of students who read the course. The findings have shown that UDL proved very beneficial as an inclusive instructional methodology in motivat-

ing and ensuring the active participation of the students in the teaching and learning activities because of the flexibility of choices and the multiple pathways to learning it offers. Though UDL was largely observed in the course delivery, the lack of resources to support its implementation narrowed the observance of some of the items under the key principles. It is recommended that the Ministry of Education and heads of educational institutions across Ghana consciously train their instructors to understand the requirements of UDL and how to implement them during teaching and learning activities. Since UDL requires careful planning and the use of diversified course materials and instructional tools, educational institutions should endeavor to support the efforts of instructors who redesign their courses in UDL with the needed logistics. While the subjective views of the two observers might have affected the scoring based on the UDL-OMT, the qualitative views expressed by the students validated the scores. It is recommended that future studies use more than two observers to measure the level of UDL implementation in course delivery. Other studies must use both experimental and control groups to be able to measure the impact of UDL's implementation better by comparing its impact on the learning processes and academic output of students.

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