READ WRITE EASY:
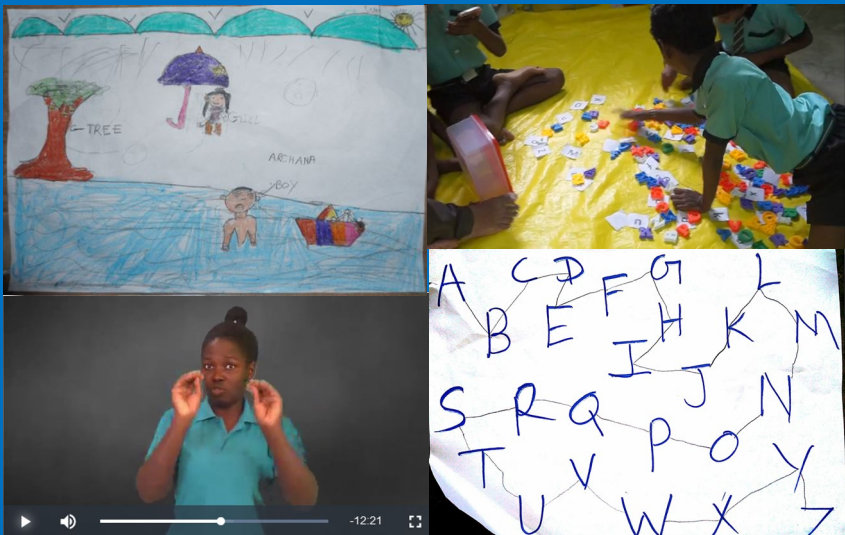## Research, practice and innovation in deaf multiliteracies

Volume 1

*Jenny Webster &
Ulrike Zeshan (Eds.)*

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The Ishara Research Series is an open access series dedicated to current research in sign language linguistics and Deaf Studies. The series is designed for publications that are of current relevance to the field but are not easily accommodated within the scope of conventional outlets. This innovative format is ideal for young researchers and first-time authors publishing work of high academic quality. The series is intended to be a tool for stimulating research in emerging areas, with particular emphasis on promoting Deaf authors and authors in countries where sign language studies and Deaf Studies are not yet established disciplines.

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READ WRITE EASY: Research, practice and innovation in deaf multiliteracies

(Volume 1)

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Preface

This publication, appearing in the form of two related volumes, is the result of a substantial process of research in the field, analysis of data, and coordinating the writing of chapters with many contributors. The several successive research projects that are the basis for the two volumes are described in the introductory chapter.

We would like to thank each of our expert contributors and all of the project participants, research team members and partner institutions who made this book possible. The respective individuals and institutions are acknowledged in the relevant chapters of both volumes. We also acknowledge the Vidya Bhawan Society, who have been our partner in India during the production phase of the books.

To make these publications possible, each author gave their time and expertise generously throughout 2020 and 2021, despite the many unprecedented challenges and disruptions caused by the COVID-19 pandemic. We would also like to express our appreciation to all of our learner participants and, in the case of participating children, their caregivers for granting us permission for the use of all of the images that appear in this volume and its counterpart.

We are delighted that across these two volumes, both deaf and hearing authors are represented, and there is a balance between authors from the Global South and North. Six deaf and 11 hearing authors have worked on the various chapters, with most of the deaf authors being based in Southern countries. Out of the 17 authors, 10 are based in the Global South. It is very encouraging to have had the involvement of more contributors from the Global South than the North, as the balance is often the other way around in similar publications. We hope that this balance and deployment of outstanding Global South scholarship will be repeated in future published works in deaf studies, literacy studies, education, and related fields.

Finally, we wish to thank all those who have contributed their effort and commitment to bringing this book project to fruition. We are very grateful to the anonymous reviewers for their expert guidance. We also acknowledge everyone who has contributed to the technical realisation of the two volumes, from typesetting to sourcing pictures and working with proofs and formatting. In particular, we are most grateful to the series editor Nick Palfreyman, who has gone the extra mile many times to support us as the books were developing through the necessary

stages. His role in undertaking and coordinating the peer reviews for both volumes has been absolutely essential, and we thank him for the incredible amount of assistance he has provided throughout the editing process.

<div align="right">Jenny Webster and Ulrike Zeshan, November 2021</div>

Introduction: From literacy to multiliteracies with deaf learners

Jenny Webster and Ulrike Zeshan

This book, along with a second volume, presents a strand of innovative research with, by and for deaf people in countries of the Global South that led to new learning opportunities in the field of language and literacy. This work builds on decades of research in the education of deaf children and youth, in particular in the area of sign bilingualism, that is, the acquisition of a sign language and a spoken language primarily in its written form alongside each other (e.g. Wilbur 2000; Marschark, Tang & Knoors 2014; O'Neill 2017).

Tang (2017) traces the development from 'traditional' sign bilingualism that arose in the 1980s in specialist schools for deaf children as a consequence of sign language linguistics, to more recent attempts at integrating sign bilingualism into regular schools. The latter includes models such as co-enrolment, where a critical mass of deaf students integrate with a larger group of hearing students, and teaching staff communicating through both spoken/written language and sign language are present in the same setting. Tang (2017) argues that sign bilingualism and co-enrolment have shown promising results, including deaf learners' competences in literacy. An active debate continues among researchers and practitioners about ways forward in deaf education, and further literature is discussed in the individual chapters of both volumes.

The research presented in this book and its companion second volume diverges from the focus on literacy by extending the discussion to the acquisition of skills in multiliteracies. This means developing a complex range of semiotic resources that are multilingual and multimodal, including sign language(s), reading and writing, drawing and other visual representations, and technology-mediated communication, as well as metalinguistic and meta-cognitive skills (New London Group 1996; Cope & Kalantzis 2015). There is a conceptual overlap with translanguaging, which denotes 'the complex language practices of plurilingual individuals and communities, as well as the pedagogical approaches that use those complex practices' (García & Li 2014: 19). Translanguaging has been applied to deaf sign language users and their communicative strategies both inside and outside classrooms (e.g. Swanwick 2017; Safar 2017; De Meulder, Kusters, Moriarty & Murray 2019). The notion of linguistic and semiotic repertoires that are deployed in communication is central

to both multiliteracies and translanguaging. In addition to the focus on multiliteracies, another particularity of the research presented here is that it is based entirely in countries of the Global South, namely South Asia and sub-Saharan Africa.

Work reported in the individual chapters speaks to the longstanding issue of deaf learners' insufficient access to quality education, resulting in lack of employment, income, fulfilment and quality of life. Working with young deaf people in India, Ghana and Uganda, the research team has facilitated the acquisition of reading, writing and multiliteracies skills through sign languages in programmes led by deaf peer tutors.

This work has followed a learner-centred approach, aiming to use deaf communities' own resources and making full use of accessible communication in a deaf-friendly environment. After the initial approach was validated in research with young deaf adults (Zeshan et al. 2016; Waller, Jones & Webster, this volume), the work was extended to deaf primary school children. Rather than implementing individual interventions, the research team has sought to establish new ecosystems of learning where different elements of the learning situation come together and support each other in novel ways (Fan 2018). In these ecosystems of learning, the content, the pedagogy, and the supporting technology interact in order to stimulate learning, and multiple factors combine in a holistic way. For instance, the content may consist of authentic learner-generated materials (instead of a standard textbook), alongside learning led by deaf peer tutors with a sign language as the medium of classroom communication, and supported by multimedia technologies. Different aspects of this work appear throughout these volumes.

The immediate goal has been to improve educational attainment and professional development for deaf sign language users, increasing their access to literacy and multiliteracies learning. However, capacity building has been equally important, with a particular focus on South-South collaboration. The team have trained an international group of young deaf professionals as resource persons and created curricula to qualify deaf people for teaching roles. Within the research team, young deaf researchers were supported in their professional development, including the presentation and publication of their own research.

In this introductory chapter, the trajectory of the successive phases of this research is discussed in section 1. Then a short description of each research chapter in the current volume is provided, situating the chapters in the context of the overall research programme (section 2) and setting out the thematic focus of this volume. Themes that are covered include tracking and testing of learners, pedagogical issues as seen from teachers'

perspectives, and issues related to curricula. Next, a preview is given of four 'innovation sketches', which are short reports of innovative practices that have arisen in the context of this research (section 3). These sketches are not based on data analysis but are relevant for practitioners and for researchers with an interest in methodologies. In this volume, authors report on learner portfolios as a teaching method and a way to document learners' progress; a method for creating original storybooks with deaf children; and two curriculum-related innovations: creative facilitation of learning through the use of a 'reverse curriculum' concept, and a co-creative curriculum development process. Finally, section 4 describes some of the overall impacts of the research and the measures being taken to support its future sustainability.

This volume has two main parts: Part 1 includes four research chapters, while Part 2 presents the innovation sketches. This book is the first of two volumes. The second volume likewise includes research chapters and innovation sketches, but with a different thematic focus, namely learner engagement and classroom practice, capacity building, and issues related to educational systems. Where relevant, cross-references are made to the second volume throughout this book.

1 Research trajectory

This research is the result of three successive international projects led by the International Institute for Sign Languages and Deaf Studies (iSLanDS) at the University of Central Lancashire in collaboration with partner organisations in the UK, South Asia and sub-Saharan Africa. All three projects were funded by the UK's Economic and Social Research Council (ESRC) and the Foreign, Commonwealth & Development Office[1] (FCDO), through their joint scheme 'Raising Learning Outcomes in Education Systems'.

All three projects have involved fieldwork in the participating countries, including work with both deaf adults and deaf primary school children. As part of the ethics procedures, consent for the use of data was obtained from the participants, either from the individuals themselves or from the children's parents or schools (in the case of boarding schools, it is common for the school to act *in loco parentis* in some countries). The pictures used in this volume are covered under this informed consent

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[1] The original funder was the Department for International Development (DfID), which merged with the Foreign Office to form the FCDO in 2020.

provision. Where consent is in place and individual authors have felt it appropriate, real names (first names only) may have been retained, or authors may have used alias names.

The first project was a pilot in cooperation with Lancaster University and partner organisations in India called 'Peer-to-Peer Deaf Literacy' (P2PDL; 2015–2016).[2] It explored innovative ways to teach literacy to deaf adults in India through sign language, peer tutoring, and a bespoke online platform called Sign Language to English by the Deaf (SLEND). A central element was the focus on 'real literacies' (Papen & Tusting 2019), that is, working with texts that the learners would come across in their daily lives ('Real-Life English'). The aim was to design, implement, and evaluate English literacy instruction, using Indian Sign Language as the medium of communication between tutors and learners; deaf peer tutors delivering the interventions with deaf learners; and multimedia online learning materials, designed by the groups of learners themselves. As well as deaf research assistants and peer tutors, the project involved academics across multiple disciplines including applied sign language linguistics, ethnography, digital literacy and teaching English to speakers of other languages (TESOL), together with deaf-led NGO partners in India. The project also employed individual deaf research assistants working in sub-Saharan Africa (Ghana and Uganda) on exploring the feasibility of such an approach through stakeholder workshops.

The second project was a three-year study called 'Peer-to-Peer Deaf Multiliteracies' (P2PDM; 2017–2020), which maintained the main elements from the pilot – sign language as medium of communication, deaf tutors, 'Real-Life English' and ICT resources – but extended the approach in several ways. Firstly, the investigation moved on from a focus on literacy to a wider perspective of deaf learners' use of 'multiliteracies'. This means that the targeted skills are not limited to reading and writing but extend to other modes of expression such as sign language (including fingerspelling), drawing, and technology-enabled and multimodal communication. The broadening of focus from literacy to multiliteracies was motivated by the findings from the pilot research, which indicated that important learning took place across a range of skills related to different types of literacies (see section 1.2).

Secondly, whereas the pilot project only involved young adult learners, P2PDM also worked with deaf primary school children. As

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2 Within the text, we use shortened project names for easy reference. For the full names, see the acknowledgements at the end of this chapter.

disadvantage of deaf learners in education already begins at primary school level (Murray et al. 2016), the team wanted to extend the logic of the multiliteracies approach to primary school children, introducing the same principles of learner-centric teaching methods delivered by local deaf tutors and supported by deaf research assistants. Finally, the P2PDM teaching interventions were expanded to Ghana and Uganda, supported by local partner organisations, in addition to continuing work in India. Extension workshops were also conducted in Nepal and in Burundi but without implementing any teaching activities.

The third project was a collaboration with Uganda's Makerere University and several partner NGOs in India to increase the impact of the research by building capacity among deaf tutors and creating bilingual teaching, training and learning resources. This impact project was called 'South-South collaboration in realising the impacts of Peer-to-Peer Deaf Multiliteracies research in India, Uganda, and Nepal' (2019–2021). Again, this project relied on the outcomes of the previous research, aiming to turn research findings into pedagogical practice. A combination of capacity-building training and materials development resulted in a set of instructional videos in Indian, Ugandan, and Nepali Sign Language, as well as curriculum designs for training deaf professionals in deaf education. This project was particularly fruitful in producing a number of innovations in practice and methodology. These are summarised in the innovation sketches of both volumes and notably include several innovations that are based on Serious Games, that is, activities that have the form of games but have non-entertainment purposes such as training or awareness (cf. Zeshan 2020).

Across the three projects, the partners based in India included the National Institute of Speech and Hearing (NISH), the Delhi Foundation of Deaf Women, the Rural Lifeline Trust, the Haryana Welfare Society for Persons with Speech and Hearing Impairment, and Vidya Bhawan Society. The African partners were the University of Ghana, Uganda's Makerere University, and the Uganda National Association of the Deaf, and the UK partner was the Literacy Research Centre at Lancaster University. In addition, a range of local organisations providing education to deaf students worked with the project team to set up learner groups as field sites for the research.[3]

Across these three projects, the research team was able to develop the work by cascading the approach to a wider variety of deaf learners in

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3 Local partner organisations are acknowledged in the individual chapters in this volume.

different countries (1.1) and by moving from the concept of 'literacy' to that of 'multiliteracies' (1.2).

1.1 Cascading to multiple countries

The seeds for this work were planted in 2009, about six years before the pilot project, when the iSLanDS Institute established a BA course in Applied Sign Language Studies (BAASLS) in India. This course equipped a pool of deaf graduates with the capabilities needed to carry out the pedagogical approach that the team developed in the later research programme. BAASLS was the first university-level course on sign language in India and graduated 70 students from several countries in the Global South, including all the countries that subsequently became involved in the deaf literacy/multiliteracies research, with the exception of Ghana.

Based on the P2PDL pilot, the second project P2PDM was able to roll out teaching interventions to other educational institutions in India, Ghana and Uganda, as well as exploring the approach with further countries through workshops in Nepal and Burundi. The impact project then focused on the professional capabilities for deaf people to act in teaching roles, setting up a programme for deaf trainees from India, Nepal and Uganda. Engaging with more systemic interventions through the creation of curricula and learning resources for language and literacy was another focus of the impact project (cf. Akanlig-Pare, Mugeere, Singh & Zeshan 2021). Figure 1 illustrates the trajectory from 2015 to 2021, with each dot representing a partner location. Work has included interventions with schools and adult learning centres (in blue), exploration with communities (in red) and professionalisation with deaf tutors (in green). These phases correspond to the three successive projects.

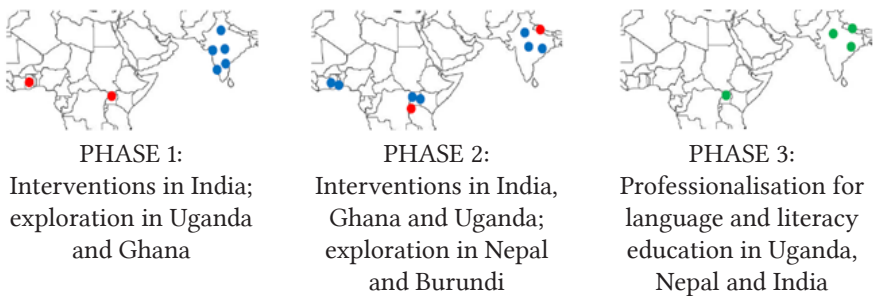| PHASE 1: | PHASE 2: | PHASE 3: |
| Interventions in India; exploration in Uganda and Ghana | Interventions in India, Ghana and Uganda; exploration in Nepal and Burundi | Professionalisation for language and literacy education in Uganda, Nepal and India |

Figure 1: The trajectory of the peer-to-peer deaf literacy and multiliteracies initiatives from 2015 to 2021

This cascading of work to multiple countries is not to be seen purely in numerical terms, that is, in terms of the number of locations and institutions involved. Roll-out here does not imply working with more partners in each phase. Instead, the qualitative progression is just as important, as this work has moved from running exploratory workshops to implementing classroom interventions to targeting professionalisation of teaching roles. In some cases, there has been a continuous trajectory, but this was not always possible. For instance, work in Uganda has gone through all three phases. Throughout the entire period, India has taken a lead role and involved a wider network of partners compared to other countries. This is due to the long-standing embedding of work by iSLanDS in the country, as exemplified by the introduction of the BAASLS degree course.

However, there has been expansion over time with respect to the number and diversity of learners involved. In the pilot, the learners were all adults, and they focused on functional aspects of English, which means using the language to do everyday things such as sending WhatsApp messages. Classes were implemented at five field sites across India, with a total of 46 deaf learners between the ages of 18 and 35. The project employed three deaf research assistants and five deaf peer tutors in India. The team also carried out small-scale investigative fieldwork in Ghana and Uganda, with the help of two more deaf research assistants, to look at transferability across contexts.

For the P2PDM project the team included groups of children as well as adults. By the end of this phase, 124 young adults and 79 primary school children had been involved. The P2PDM project provided 13 posts for staff in India, Ghana and Uganda, and it revealed that new ecosystems of learning can be developed and adapted for use with groups of deaf children and youth in different countries of the Global South.

In order to go a step further towards introducing key elements from the research into concrete educational contexts, the third project concentrated on capacity-building with young deaf professionals. It was not possible for reasons of feasibility and resources to involve all countries from P2PDM in the impact project, so work was carried forward in India, Uganda and Nepal. A group of 12 trainees participated in a six-month training programme organised in India in 2019–2020.[4] The project has

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4 The impact project was heavily affected by the Covid-19 pandemic. Although the main objectives were fulfilled, the amount and quality of stakeholder engagement was much reduced as activities moved online. Part of the training programme had to shift to an online mode, and efforts towards exploring accreditation options for the new curricula were adversely affected.

also been generating a range of materials including curricula in the area of language and literacy provision, teachers' handbook materials, teaching and learning materials, and prototypes for alternative learning. Some of these materials are discussed in the chapters of this volume, as well as in Volume 2. They underpin newly arising roles for deaf professionals, and indeed have been co-created with the group of trainees and with the project staff. The curriculum and materials design has arisen directly from the experiences of the preceding projects.

Another aspect of the research trajectory is the involvement of individuals from the target countries in the different phases. Involving the same people across different phases has given continuity to the research programme and facilitated the capacity-building aspects, as deaf project members increasingly gained research skills and pedagogical experience. Table 1 illustrates some of this continuity, showing how people progressed individually.

Table 1: Continuity of people from India (IN), Uganda (UG) and Ghana (GH) across the research trajectory

BAASLS		P2PDL		P2PDM		Impact project
Lecturer (IN)	→	Lecturer (IN)	→	Consultant (IN)	→	Consultant (IN)
Student (UG)	→	Research Assistant (UG)	→	Research Assistant (UG)	→	Research Assistant (UG)
		Research Assistant (GH)	→	Research Assistant (GH)		
				Peer Tutor (UG)	→	Research Assistant (UG)
Student (IN)	→	Peer Tutor (IN)	→	Research Assistant (IN)	→	Research Assistant (IN)
		Peer Tutor (IN)	→	Peer Tutor (IN)	→	Research Assistant (IN)
Student (IN)	→	Peer Tutor (IN)	→	Peer Tutor (IN)		

These kinds of continuities are rare but seem to offer valuable opportunities for deaf individuals to build their knowledge and skill-sets. McEwan (2021) analyses the peer support networks among deaf peer tutors and research assistants from the three countries involved in P2PDM. The findings indicate a rich set of interactions between project staff at different levels

and in different locations. For instance, out of 218 instances where peer tutors reported receiving assistance with skills or tasks from others in the project context, assistance came from research assistants 28% of the time. Skills transfer was horizontal from one peer tutor to another in 22% of cases, and help was provided by senior project staff 23% of the time. Two of the peer tutors also gained considerable support from interacting with colleagues in another project country (McEwan 2021: 190–195).

1.2 Literacy to multiliteracies

The pilot project aimed to explore new ways of teaching English to deaf learners in India, with a view to improving the quality of educational outcomes for learner groups who do not adequately benefit from traditional interventions. Instead of traditional language teaching, this project took a learner-driven, functional and ethnographic approach, exploiting a virtual/mobile learning platform and supporting deaf peer tutors to develop their own materials and strategies co-creatively with their learners, including teaching through sign language.

The pilot project's theoretical and methodological underpinnings comprised an ethnographic approach based on authentic identification of literacy needs ('real literacies approach', Street 2012) and a transformative mixed methods paradigm (Mertens 2010) towards social justice and the furtherance of human rights (see Ahereza et al. 2016; Gillen et al. 2016; and Zeshan et al. 2016). The P2PDL project also drew on standardised language testing using the Common European Framework of Reference for Languages, CEFR, level A1/A2 (Council of Europe 2001), adapted for deaf people (see Waller, Jones & Webster, this volume) and qualitative data analysis from focus groups, interviews, and observations.

Findings from the pilot indicated a positive response regarding the real-life English approach and highlighted the use of Indian Sign Language as essential to improving English literacy (Zeshan et al. 2016; Fan 2018). The learners appreciated that working with real texts gave them opportunities to learn many useful new words and expressions, which equipped them with a vocabulary that could support them in other situations and activities in their everyday lives. Learners felt that their knowledge was positively recognised, and in the lessons, their sign language skills were valued and expanded as they jointly made sense of a text or prepared a contribution to the SLEND. They valued opportunities to connect with other student groups, the diversity of activities, and the multimodal learning resources. The peer tutors were seen as supportive, raising learners' confidence. Respondents also commented on difficulties,

most crucially, issues with access to the SLEND and some concerns regarding varieties of Indian Sign Language.

The second project, P2PDM, intended to examine how to change some of the dynamics that contribute to the disadvantages faced by deaf learners at all levels due to widespread disregard for their accessible linguistic modality (sign language), as well as their specific resources and capacities, such as peer support and visual learning styles. As in the pilot, it was important to involve deaf individuals in the design of new teaching approaches, and to use children and young people's everyday experiences and existing literacy practices as the basis for their learning. However, one of the main lessons taken forward from P2PDL was that the learners not only developed English literacy, but *multiliteracies*, i.e. skills in sign languages, written English, drawing and other forms of visual representation, editing of multimodal productions, and forms of technology-mediated communication that combine different modalities.

The basis for this approach is the idea that being 'literate' in the modern world involves a complex set of practices and competencies and engagement with various modes, increasing one's abilities to act independently (New London Group 1996). For instance, young adult learners might discuss a topic with the peer tutor, create an annotated diagram related to the topic, then film and edit a video explaining the diagram in sign language, and eventually read a related text found online, with the help of signed explanations from the tutor. This multimodal engagement involves far more than mere encoding and decoding of written text.

When working with young deaf children who are making their first inroads into a written language, other forms of expression likewise support the development of multimodal and multilingual skills. For instance, on the basis of a picture book, children may sign a story, act out the roles of its characters, produce drawings with or without integrated words, and use fingerspelling as a bridge between signing and reading/writing. In all these activities, integrating the different modalities and engaging learners with visual material has been particularly important, and several chapters illustrate how multiliteracies have been deployed in the classroom (Nankinga, this volume; Ahereza, Volume 2; and Manavalamamuni, Volume 2).

The P2PDM project's emphases on active learning, contextualised assessments and building portfolios to document progress were intended to increase the benefit to deaf learners in terms of their on-going educational journeys and, for the young adults, employment capacity. Compared with a narrow scope of literacy in terms of reading and writing

texts, the chapters in this book show that a focus on multiliteracies creates many opportunities to develop abilities, motivation and confidence, and to equip students with the communicative repertoires that will help them realise their potential.

2 Overview of research chapters

All of the chapters in this volume are based on data and analyses from the above-mentioned projects. The chapter by Waller, Jones and Webster is about P2PDL, while aspects of P2PDM are explored in the other three main chapters (Nankinga; Pal, Webster & Zeshan; and Webster & McEwan).

Waller, Jones and Webster concentrate on the assessment component of the pilot, looking at the extent to which the learners' receptive and productive skills increased. A key aim of the pilot was to generate a way of measuring the learning in order to provide evidence to authorities and funders. The authors describe how the Common European Framework of Reference for Languages (Council of Europe 2001) was used in the pilot project to benchmark the assessments, including a pre-test, post-test and delayed post-test. The results showed that the deaf learners sustained their gains in English literacy. The authors also discuss tensions between a predefined syllabus that is in line with necessary external validation, in this case an adaptation for deaf learners of level A1/A2 of the CEFR, and the learner-centric dynamics of the flexible P2PDL approach. Useful bridging concepts include the model of a 'process syllabus', which is negotiated with learners, and the notion of a 'protosyllabus', where items are listed without prescribing the way or order in which they should be covered. This chapter speaks to two of the volume themes, namely testing for learning outcomes and curriculum issues.

Turning to the P2PDM project, Pal, Webster and Zeshan discuss test results obtained from one of the project's partner schools in India. This chapter relies on quantitative data to track the learning of 22 primary school children in two different cohorts over time. The aim of P2PDM was to make assessments both child-friendly, so that they would feel like just another classroom activity without the pressure of formal testing, and more informative than simple 'right' or 'wrong' responses. Three separate measures were used to assess involvement (do children get involved in the task?), achievement (can they do the task?), and accuracy (what level of language do they use in the task?). Children were engaged in playful activities involving different languages, modalities, and multiliteracies skills. This type of assessment allowed the research team to validate the

multiliteracies approach with this age group, and to evidence progress over time in a way suitable for validation by external stakeholders.

The next two chapters move beyond India and include data from the other project countries. The chapters relate to the third theme in this volume, speaking to the perspectives of teachers with respect to issues of pedagogy, capacity building and personal development in the context of deaf tutors teaching deaf learners. Taking the perspective of teachers in the classroom, Webster and McEwan investigate the decisions made by the deaf peer tutors while teaching multiliteracies skills to deaf learners in India, Uganda and Ghana. They examine data from case studies of topics covered with learners and consider the peer tutors' descriptions of what happened in each classroom session, including their observations of learners and their reflections on their own decision-making processes. The analysis presented in this chapter covers how the lesson topics were selected by the peer tutors, how they embedded the topics to teach multiliteracies, and what they observed about the learners' engagement with the topics.

Nankinga uses a different approach to the role of teachers in her chapter, exploiting a qualitative analysis of a range of reports from various classroom settings in order to identify priority issues for teacher training. Her chapter examines how to develop the capacity of deaf sign language users who want to work in deaf education, by asking how the training of deaf teachers as professionals can be improved. She identifies a range of problems that deaf signers encountered in the teaching interventions of the project, categorised under the themes of managing diversity, teaching grammar (in this case, English grammar), lack of training in pedagogy, and the embedding of deaf signers in an existing school setting. Nankinga highlights some best practices that can be recommended for improved training of aspiring deaf teachers and tutors. She also draws on her personal experiences of undergoing such training and teaching deaf primary school children in Uganda.

3   Overview of innovation sketches

The innovation sketches in Part 2 of the volume relate to the same themes as the research chapters but are not based on data analysis. Instead, the aim is to showcase some of the project's innovative practice.

The first sketch (by Zeshan) encompasses all three of the volume's thematic focuses (tracking learning, curriculum issues, and teachers' perspectives) by looking at an approach called 'reverse curriculum'. One example of this concept relates to theme-based learning with deaf children.

The basic idea is that a theme of interest to the children is selected, and learning activities are developed by exploring the theme in relation to the different school subjects or domains of knowledge. For instance, talking about trees can be seen in relation to science ('What do trees need to grow?'), but it can also lead to creating artwork, or practising IT and literacy skills by searching for and writing down information about trees. This theme-based process is described in Zeshan et al. (forthcoming) and is well-known from 'project week' types of activities. However, the 'reverse curriculum' approach provides a game-led process to guide a group through theme-based learning, and then map such thematically motivated learning sessions onto a standard curriculum. The curriculum comes in at the end of this process instead of at the beginning.

The second example in this chapter is the 'English grammar games' approach. Here the game process starts from short learner-selected English text samples, including multimodal materials such as labelled drawings, posters, cartoons, video subtitles, etc. Learners first map a generic structure onto an instance occurring in the actual text, for example *[USE] more [THING]* matching the expression *drink more water* in the text. Then everyone writes further similar examples (e.g. eat more vegetables, read more books, earn more money), and learners compare their notes with each other and with the game materials. Learners can have meta-linguistic discussions about the target structures with their teachers during the game. Again, any grammar topics covered can be ticked off from a given curriculum at the end-of-game sessions.

The second innovation sketch (by Pal) fits into the theme of assessing learners' progress. It is about the use of deaf children's portfolios, produced in the P2PDM project, to track their development of various skills over a two-year period. This contribution is linked to the research chapter by the same lead author on tracking learning with primary school children (Pal, Webster & Zeshan), as the example portfolios come from the same group of 22 deaf children in India. Case studies include primary school children from two different age groups. Portfolios enable a qualitative dimension in monitoring learners' progress. The sketch considers the development of learners' skills in specific areas by examining eight of the portfolios as case studies. The skill areas covered include reading, writing, sign language, science, art, and mathematics.

The third sketch (by Zeshan) covers curriculum issues and teacher training. This contribution discusses the co-creative development of a curriculum for training deaf professionals in the area of language and literacy/multiliteracies. Existing provisions of deaf education in most of the project's target countries do not include qualified trainers who

can teach language and literacy using sign language as the medium of instruction (i.e. using the sign bilingual approach). Therefore, there is a need to build deaf people's capacity to teach and to create pathways for them to undertake formal training in this area. The research team sought to develop curricula that would enable deaf signers to become specialised language and literacy/multiliteracies professionals working in various deaf education settings. The aim of this contribution is to demonstrate how the perspectives, experiences and capabilities of aspiring education professionals were brought to bear on a co-creative curriculum development process.

A central aspect of the curricula that emerged from this co-creation is that they hone learners' capabilities in *multiliteracies*, not just their literacy in a written language. The educational aim is for teachers to foster the development of a multilingual, multimodal toolkit in deaf learners, maximising meta-linguistic competence. The ability to act autonomously and confidently in the modern world necessitates an increasingly complex set of skills and facility with a range of communication modes, and this is especially true for deaf signers.

The final sketch chapter (by Gillen & Papen), which overlaps with the theme of teachers' perspectives, is about creating storybooks with deaf children. The authors report on the adaptation of the 'Storymakers' materials to the P2PDM context in the participating countries. Storymakers originated in Finland as a multiliteracies resource and was created for teachers to work with young children on crafting their own storybooks (Kumpulainen et al. 2018). Originally, this was intended for hearing children from immigrant families. In Storymakers, teachers use a kit consisting of individual books with a templated story space, in which children can create stories as a combination of written language and drawings or other media. In order to implement a parallel approach with deaf children, bespoke training materials were made for the deaf peer tutors in P2PDM, including a video with signed explanations of the method. At the end of the project, children presented the resulting storybooks in multiple modalities, by showing the physical books and signing the story.

4   Impact and future work

Through P2PDL and P2PDM, project members have aimed to translate their new skills into enhanced educational opportunities for their deaf peers at each stage. They have done so by using an approach carefully tailored and tested across the project trajectory, in which deaf tutors

facilitate learning using sign language as a bridge to other literacy and multiliteracies skills.

These projects have also highlighted the importance of capacity building through research, creating career opportunities and skills development for the team members. Two PhD theses (Fan 2018; McEwan 2021) have been embedded into the projects,[5] in addition to the pedagogical training for the international deaf group that was part of the 'South-South collaboration' impact project.

Importantly, the project has enabled young deaf research assistants (RAs) to undertake and publish their own research. This book and the second volume include chapters by deaf authors from the Global South who either published for the first time or were lead authors for the first time. To increase their skills base and facilitate their contributions, the project team implemented a number of supportive measures, which are described in detail in the innovation sketch by Webster in Volume 2. Over several months, each RA attended weekly one-to-one tutorial sessions to monitor their research progress and advise them on the next steps. Secondly, they all took part in self-organised discussion sessions that they conducted remotely in their own WhatsApp group and where they could share issues and questions about their research. Where necessary, the RAs filmed their output in sign language and project members in the UK translated their signing into written English. Finally, project member Webster provided English language support remotely, advising them on how to improve their academic word choice, grammar and structure, as well as offering guidance on referencing and citing sources (cf. Barnes & Doe 2007). By the time of writing, it was clear that engaging with these measures had increased the RAs' academic skills considerably. The addition of these scholarly, peer-reviewed citations to their CVs is likely to attract material benefits in terms of career advancement as well as creating potential opportunities for the further cascading of knowledge and skills.

It would be worth analysing and deploying this approach further, to build supportive collaborations between newer and more experienced academics in the Global South, as well as North-South collaborations that result in first authorship by the Southern partners. This would facilitate greater access to research careers for deaf individuals as well as increasing the number of scholarly papers by deaf authors, who are still poorly

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5 A third PhD thesis is in progress. Two of the three PhD candidates are deaf academics.

represented in academia because of systemic obstacles to the publication process (e.g. Woodcock, Rohan & Campbell 2007; De Clerck 2010).

Another example of using a similar approach to academic outputs has been to produce a teaching handbook for language and literacy trainers, as part of the 'South-South collaboration' impact project. The main component of this handbook consists of signed lectures covering a range of topics in relation to multiliteracies education with both deaf children and deaf adults. The lectures were designed by sub-teams during the six-month international training programme, using a visual 'storyboard' process. Lectures were created in Indian Sign Language, Ugandan Sign Language and Nepali Sign Language. In addition to the lectures, supporting literature in English was assembled by the UK research team, and the signers added a selection from this material to each of the lectures, depending on which materials would be most suitable for the intended subsequent groups of deaf trainees. These materials underpin the curricula in language and literacy for aspiring deaf professionals in deaf education (see Zeshan, this volume, on co-creative curriculum development).

Another line of development has been with India's National Institute of Open Schooling. This research is supporting their new policy to implement Indian Sign Language as a school subject at secondary level and make it available throughout India via their systems. Once implemented, Indian Sign Language is set to become available as a subject to take for the 10th standard board exams, which are among the most important public examinations in India. The Indian branch of the P2PDM project has created lessons in sign language for the new programme, which constitute the core materials. Other course resources include a textbook in English based on the signed lessons and signed instructions for practical assignments. Three project members have served on the curriculum committee. The various extended training and materials development initiatives are considered further in Volume 2.

Finally, it is important to note that the ethnographic, learner-centred, and multimodal/multiliterate approaches that characterise this entire research portfolio were often at odds with the educational systems in the partner countries, and this is something that should be explored more in future research. Although these approaches were taken up in different ways in the project locations, they were not always fully in line with the students' own expectations, which may be shaped by their experiences of formal schooling and by a desire to be taught 'the basics', specifically grammar.

More generally, the researchers sometimes observed clashes with existing educational systems. For example, two groups of young adults in formal education institutions in Ghana and India asked the team to use multiliteracies sessions to support their regular mandatory classes, rather than following the team's original approach. These young people are under tremendous pressure to perform within the formal educational systems, while classes that take place in NGO settings (e.g. with young adults in Uganda) do not face this issue to the same degree.

Consequently, a key way of sustaining the impact of these projects will be to investigate how learners' experiences and expectations of formal schooling in different countries impact their readiness to adopt novel approaches to teaching and learning, and how to develop culturally-specific training that addresses these expectations. Likewise, the readiness of existing teacher training systems to integrate resources and curricula that enable deaf sign language users to qualify as professionals in the area of language and literacy/multiliteracies is an unresolved issue that needs more attention in the future.

Acknowledgements

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PART - I

Assessing deaf students' development of English literacy in a peer-to-peer learning programme

Daniel Waller, Christian Jones and Jenny Webster

1   Introduction

Learners around the world who take on the challenge of acquiring an additional language, such as English, do so for a variety of reasons. Gardner and Lambert (1972) and Deci (1975) identified a number of types of motivation including extrinsic, where an individual is motivated not by their own desire to learn but by external factors such as employment demands or parental pressure; and instrumental motivation (Dornyei 1994), where the language is studied in anticipation of some form of return such as a promotion at work or the opportunity to travel. For some populations, the ability to use a foreign language may enable them to participate more widely in society. In a country like India, where English has a role as an official language, the opportunity to study the language could contribute considerably to the quality of life. Such motivations were recognised in Van Ek's Waystage level definition, the first iteration of what was later to become the Common European Framework of Reference for Languages (CEFR).

However, in many places specialised education for deaf learners is either poorly developed or non-existent. Where education is provided, it is often applied in a traditional top-down fashion instead of being based on the needs of the deaf learners. This gap was addressed in the pilot project discussed in this chapter, which was entitled 'Literacy development with deaf communities using sign language, peer tuition, and learner-generated online content: sustainable educational innovation'. It was developed by the International Institute of Sign Languages and Deaf Studies (iSLanDS) at the University of Central Lancashire (UCLan), and the Literacy Research Centre at Lancaster University. The project was funded under the 'Raising Learning Outcomes' scheme run jointly by the UK's Economic and Social Research Council (ESRC) and Department for International Development (DFID). The aim of the project was to create a deaf-led, peer-to-peer English teaching approach in India which could be put forward as a model enabling other institutions to incorporate deaf learners' needs into the delivery and assessment of literacy programmes.

A discussion of the concept of literacy in the wider context, and in this specific context with deaf learners, is provided in the introduction to this volume. In order to examine whether the learners had made any increases in their English language proficiency across the six months of instruction, the team asked three research questions (RQs):

1. To what extent have the learners on the course demonstrated gains in their overall scores across the pre/post/delayed post test assessments?
2. To what extent have learners demonstrated gains in (a) their receptive skills and (b) their productive skills?
3. To what extent have learners demonstrated gains in CEFR level?

Section 2 of this chapter explains how the course and assessments were designed, and section 3 describes the context of the course and learner groups, including details about the setting (3.1), the three stages of testing (3.2), the assessing of both receptive and productive skills (3.3), the localisation and administration of the test (3.4), and the question of whether to establish a control group (3.5). In section 4, the methodology and results are explored for all three research questions (4.1, 4.2 and 4.3). Then, section 5 covers the learners' engagement with the assessments (5.1), their productive gains (5.2), and the implications of feedback from learners and the project team (5.3). Section 6 provides an overall conclusion.

2   Course design and assessment

It is interesting how little attention is assigned to assessment in discussions of course design. Graves (1999) spends little time on setting out the process while Nation and Macalister (2010) reduce it to a few considerations. Seminal papers in the area of course design, such as Brumfit (1984) on the Bangalore project, fail to discuss how assessment is to take place. However, as far back as 1989, Brown was arguing that the devising of assessment was a key stage in course development. One reason why assessment is often so neglected in discussions of course design is that course designers often consider themselves to be teachers rather than assessors and may dislike engaging with what can be perceived as a baffling field full of complex terminology. Nevertheless, there is a growing recognition that assessment literacy among classroom practitioners and course designers is very much to be desired and that assessment is, in the words of Charles Alderson 'too important to be left to testers' (2001: 1). However, designers of courses targeting deaf learners are faced with a very limited number of options for assessing writing and composition skills (Bowers, Dostal, Wolbers & Graham 2018: 2):

Although there is a small corpus of research suggesting that the linguistic proficiency of d/hh students may influence the unique characteristics found in their writing, there are only a few assessment options that specifically target written composition reported in the literature. Norm-referenced standardized tests are often used to assess the writing skills of d/hh students; however, the practice of evaluating the writing outcomes of d/hh students by these standardized assessments alone has been criticized, as they may not capture the unique strengths, weaknesses, and characteristics of d/hh students' writing.

Since the 1970s, methods for teaching and assessment that were developed for English as a second language (ESL) learners have been used with deaf learners (e.g. Goldberg & Bordman 1974; Bochner 1976; Langston & Maxwell 1988; Bochner & Walter 2005). Educators adapted oral-aural methods and exercises from ESL classes in order to teach English grammar to deaf students through written text, particularly word endings like –ed, which both deaf and ESL learners tend to find difficult.

Assessment takes on additional importance in the development of innovative approaches, methodologies or courses as it is necessary to demonstrate to a wide, possibly sceptical, audience that the effort and resources expended on a pilot have reaped results. Course design from Munby (1978) and Hutchinson and Waters (1987) through to Tomlinson and Whittaker (2013) acknowledges the importance of considering the various stakeholders in the development of a course. Stakeholders outside of the immediate classroom such as the senior staff in a school or institution, inspectors, parents and official decision makers such as funding bodies frequently require some form of evidence in order to support, approve or fund projects. Assessment results, along with other accumulated forms of validation, such as learner and educator feedback, can be an essential source of information.

The involvement of stakeholders is even more critical when an assessment targets the learning of traditionally disadvantaged groups such as deaf learners. For example, Strassman, Marashian and Memon (2019: 520-521) state that 'the relationship between assessment and instruction of d/Deaf students is an area of concern' because it is rare for deaf students to be included in the norming sample when standardised assessments are devised. It is therefore difficult for teachers to determine what reading materials are suitable for a given deaf student (Schirmer 2000). Even the translation of test items into the student's native sign language may not enable them to participate on an equal basis in standardised assessments (Cawthon, Winton, Garberoglio, & Gobble 2011).

Although often overlooked by course designers, the field of language assessment has developed tools and frameworks to examine the effectiveness, impact and trustworthiness of educational decisions under the developing notion of validation. The use of such models is arguably just as important in the development of courses as it is for language assessments, since both are based on designing the best approaches, methods and materials for a particular group of learners in a particular context. One such model is the socio-cognitive framework developed by Weir (2005) and the Centre for Research in English Language Learning and Assessment (CRELLA). The model is termed socio-cognitive because it addresses both of these areas. The social dimension of the model requires those using it to consider the learners in their social context and the many factors that the assessment (or course in this case) might be influenced by or have influence over. The cognitive element considers both the psychological and psycholinguistic aspects of the learners as well as defining the cognitive processes learners are expected to engage in as part of the constructs that they are building and the cognitive demands of the tasks selected. It is not hard to see how such a model can have powerful applications to the field of course development.

The model proposed by Weir (2005) also sets out *a priori* specification and *a postoreri* evaluation, namely that design needs to clearly set out what is to be assessed and that evaluation needs to consider the extent to which the designed assessment (or course) fits with the context and requirements. The socio-cognitive model and these concepts were key reference points in the design and development of the course and assessments on this project.

3   Context

3.1 Setting

The course was run at five sites in India (Thrissur, Pattambi, Coimbatore, Vadodara and Indore) for six months during 2016. The course made use of face-to-face instruction as well as an online platform to host materials that could be shared between the learners. The online platform was called the SLEND (Sign Language to English by the Deaf, see Figures 1 and 2). It featured 'real-life English' materials (see Webster & Zeshan, this volume) that the learners brought into class such as application forms and posters, and work generated by the tutors and learners such as a clock task (Satchwell 2005) in which they wrote on a clock face how they had used English during each of the last 24 hours (see Figure 3). The most important components of the SLEND are the Indian Sign Language

videos within the 46 learner-generated English literacy sessions (Zeshan et al. 2016). The language tests were also administered on the SLEND, including the pre-tests, post-tests and delayed post-tests (see Figure 4), as well as self-assessment skills questionnaires. However, there were some problems with accessibility, due to bandwidth limitations in the regions where the classes were held, and the learners made much use of WhatsApp when the SLEND was not accessible to them.

Figure 1: A page from the SLEND accessed via smartphone
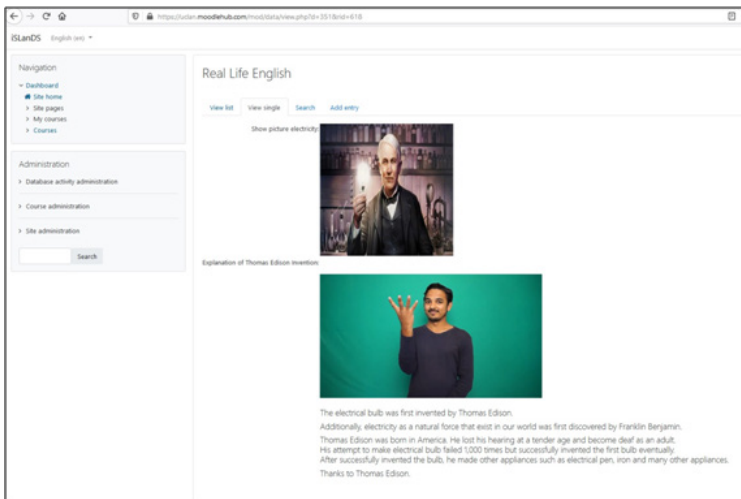
Figure 2: A real-life English exercise about electricity on the SLEND[1]

Figure 3: Learners working on the clock activity
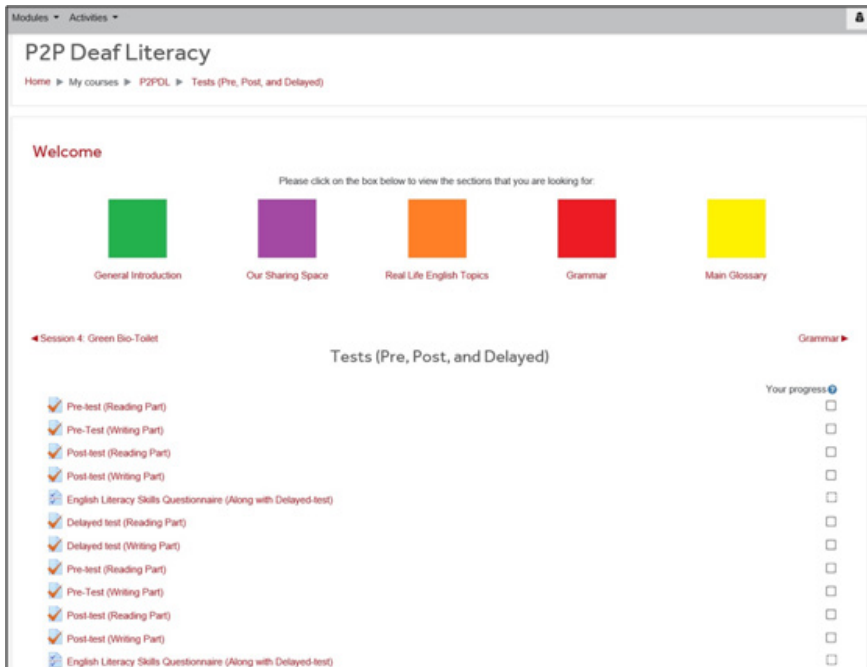
Figure 4: The pre-, post- and delayed tests on the SLEND

The course was innovative for a number of reasons. Firstly, in many locations in India, the teaching of deaf students had little methodology

or specialist provision, with deaf learners tending to receive an inferior version of the learning delivered to hearing students. This is a problem in other countries as well (e.g. Lane 1992; Eckert & Rowley 2013). Therefore, a course developed solely for deaf learners, focussed on needs identified by them and taught by teachers who were themselves deaf learners was a radical departure from previous educational practice. Secondly, the learning was accessible via mobile technology, and the learners were able to use WhatsApp when there were difficulties with using the SLEND.

The development of the course followed the four key steps and principles listed in Table 1, which are explored below.

Table 1: The four main principles of the peer-to-peer deaf literacy project

1	Pre-training and exploration of context and needs
2	Learner-led selection of materials
3	A negotiated syllabus
4	Standardised assessment

The first step, pre-training and exploration of context and needs, was carried out by the project team which included deaf scholars who were familiar with the setting. In addition to this, the project took an ethnographic approach, i.e., a methodology that is 'based on the premise that in order to find out what people do with literacy, the researcher needs to observe such literacy uses and also ask about them' (Papen 2012). This approach was used to explore the target communities' views on the project, the expected outcomes, and how the course should be developed (Gillen, Panda, Papen, & Zeshan 2016; Ahereza, Fan, Gillen, Nyarko & Zeshan 2016). This information was provided to other members of the team based in the UK, who then devised syllabus documents and assessments. The local/contextual ethnographic approach to teaching, however, conflicts somewhat with the use of the global/non-contextual CEFR for testing (Fan 2018: 216). Nonetheless, these documents were then relayed to the peer tutors in the setting. At a meeting towards the end of the project, the peer tutors were able to confirm that most of the curriculum had been covered (see Appendix). The peer tutors' input also contributed to the adaptation of the tests to the local culture. This informed the subsequent three-year project, where the tests were slightly different in each country, especially the reading prompts.

A key element was that this was a local deaf-led project (cf. Dikyuva, Escobedo Delgado, Panda & Zeshan 2012) and while the UK team provided some elements, they were not to prescribe the content. Decisions about

teaching and learning were ultimately in the hands of the relevant deaf communities. Another feature of the design was that the deaf learners themselves would be able to select materials based on their needs and the English that they encountered in their daily lives. These were collected by taking photographs (see Figure 5) which could be shared on the online platform and then used as the basis for input and lessons by the tutors. The course evolved in a way similar to models of the process syllabus (e.g. Breen 1984) in which the content is negotiated with learners.

Figure 5: A photograph of a sign at Thiruvananthapuram Zoo and an explanatory video on the SLEND

The final step was standardised assessment. One of the principles of the course design was that while the desire was for responsive and learner-driven content, it was also essential that the course should be able to

demonstrate any impacts. One of the issues with process syllabuses identified by Wette (2018) is the issue of accountability to stakeholders which in this case included funding bodies as well as decision makers at the national level in India and deaf community organisations. Without some way of evidencing that the course was successful, the likelihood of further funding and the ability to influence educational policymakers and deaf communities would have been extremely limited. Furthermore, since the course was envisaged as a pilot that could be adopted more widely by deaf communities in other settings and countries, it was crucial to be able to demonstrate external validity (e.g. Bracht & Glass 1968) by illustrating that the intervention had had a positive impact.

It was decided early on that in order to demonstrate impact, the course would have to have some form of benchmarking to a known scheme for considering language learning and levels. The CEFR (Council of Europe 2001) was chosen for this purpose because firstly, the CEFR can be applied to a wide range of languages and was designed in part to give educators a shared terminology in order to talk about features of language learning, including the notion of level. By using the CEFR, learner achievement could be stated using terms that would be understood by the wider community of stakeholders, including policy makers. Secondly, the CEFR sets out the features of different levels by describing the language competences that learners are expected to display. These competences are expressed as functional statements, a feature that was essential on the course; the course had to deliver learning which would be of benefit to the learners and be tied to the real-world tasks that the learners had to carry out in their daily lives. A grammar- or structure-driven syllabus was seen as being inadequate to the context as it lacked the flexibility to allow for learners to introduce their own input on the course. There is very little literature on the use of the CEFR to teach English or other written languages to deaf learners, although several researchers have applied the CEFR to sign language teaching (e.g. Nijhuis & Terpstra 2015; Snoddon 2017). In addition, teachers perceive that using the CEFR increases students' motivation (Faez, Majhanovich, Taylor & Smith 2011).

The centres provided feedback at the beginning of the project at the participant recruitment stage, derived from a quick assessment by the peer tutors to determine whether the prospective learners could sign well in Indian Sign Language (as it was required for all of the participants to have ISL as their first language) and had a functional vocabulary and some knowledge of the English alphabet. Based on this feedback, the learners on the course were envisaged as being A1 to A2 in terms of level, so statements from the CEFR from these levels were selected which

related to the skills of reading and writing. Listening and speaking were omitted as these are much less accessible and relevant to deaf signers. During pre-meetings and when receiving feedback from the peer tutors, it was felt that some language guidance would be necessary to illustrate to them how the CEFR statements could be used. A protosyllabus was drawn up using the CEFR statements and providing linguistic exponents as illustrations (see Table 2 and Appendix). A protosyllabus is one that provides the items expected to be covered on a course in list format but does not prescribe *how* these are to be covered or in what order (Yalden 1983). Often a protosyllabus is used in conjunction with a course outline document which translates the objectives into a teaching plan. The linguistic exponents for the Can-Do competences were drawn from Van Ek and Trim's *Waystage 1990* document (1998[1991]) and provided to the peer tutors as an example of how CEFR statements could be transferred into language objectives. It transpired that by the end of the course, although those implementing the course had drawn on materials and objectives suggested by the learners, the majority of the competences and the language exponents proposed in the protosyllabus had been covered.

The assessments were designed to assess the reading and writing skills of the learners on the programme and a number of decisions were taken regarding how the assessment would be administered. In February 2016, it was decided that the project team would not enforce the teaching of any particular topic on the field sites, as the taught content would be left to the peer tutors to determine, but that the team would attempt to match the taught content to the syllabus document developed by Waller and Jones (see Appendix), and use this information to develop the assessments. By April 2016, Waller had devised the pre-, post-, and delayed post-tests. The team discussed how and whether to proceed with the delayed post-tests, since it would be unclear what learners did after the intervention and hence how valuable these results would be. However, the team agreed that gathering delayed data three weeks after the intervention would validate the results and make them more persuasive and reliable. This was determined to be logistically feasible as well, e.g. because the Indore group would be back in school in July and could easily be re-tested. In May 2016, the team decided to look at the assessment data in terms of overall gains across the tests. The items were parallel across each test, so the team agreed to examine them by function to check for receptive, and then productive, improvements. It was also determined that some qualitative analyses would be carried out to investigate the way the learners used things like clause complexity. Bowers et al. (2018: 8) note that studying qualitative data on clause complexity is important because

learners who challenge themselves to produce more complex sentences might make more grammatical mistakes than learners who opt to write simpler phrases.

Table 2: An extract from the protosyllabus. The blue and green highlighted text indicates items that were evidenced on the SLEND and WhatsApp respectively. Yellow indicates items evidenced on both SLEND and WhatsApp. Refer to the Appendix for the full protosyllabus.

Can do statements	Functions	Example exponents
Can understand short, simple text messages. *Can read very short, simple texts. (Original statement in CEFR)*	Giving information Locating key information Making arrangements Saying hello and closing	I'm_____ Class is on Friday, 10 am Come on 10 July See you Friday. What time shall we meet? Hello/Hi/How are you? Thanks for the information See you soon/then, BYE
Can interact in a simple way provided the other person is prepared to assist and help me formulate what I'm trying to communicate. *Can interact in a simple way provided the other person is prepared to repeat or rephrase things at a slower rate of speech and help me formulate what I'm trying to say.*	Congratulating Provide basic information Reminding Greetings Farewells Social exchanges Making arrangements Giving an opinion Express doubt Reassuring	Well done! You can buy stamps at the post office. Don't forget… Good morning/afternoon etc Bye / Goodbye Happy birthday! See you tomorrow/on Wednesday I think… Well, I'm not sure. Don't worry (about)…

Table 2: continued

Can do statements	Functions	Example exponents
Can understand familiar names, words and very basic phrases for example on simple notices in most common everyday situations. *Can understand familiar names, words and very basic phrases for example on simple notices and posters or in catalogues.*	Understanding information Inferring meaning from ellipted phrases (e.g. No smoking = do not smoke here)	Drinking water No smoking Toilets Staff only

One question in the discussion was at what point a learner meets A1 or A2 level. Anchoring the forms to the levels gives us a profile of an individual who is at A1 or A2, but it was difficult to say where the line between the two would be. Another issue the team discussed was discriminating between the strongest and weakest performance. While it was tempting to look at the average high scores, the team wanted to see if the scores at the bottom had been lifted. This type of data is vital for writing education policy documents for the Indian government, which was a major aim of this research including the pilot project and its further permutations.

3.2 Pre, post and delayed post-tests

A pre-test was applied before the course started in order to assess the English language ability of the learners. This was held to be essential as it would form the baseline of the study in the absence of any other reliable data about the learners such as scores from their previous studies. The post-test was administered at the end of the course to gauge the immediate impact of the teaching. Finally, the delayed post-test was administered three weeks after the end of the course in order to assess the extent to which the teaching had achieved a lasting impact on the participants. A period of three weeks was chosen following Schmidt, Zlatkin-Troitschanskaia and Jean-Paul Fox (2016) as it was deemed to be long enough from the end of the teaching to limit the impact of short term memory while still being short enough to practically engage learners who were no longer studying full time on the course and had dispersed back to their own communities across India.

3.3 Test of reception and production

Each test was divided into two parts: a receptive and a production test. The receptive section focussed on reading skills and was assessed through multiple choice and matching tasks (see Figure 6). The production part contained elements of reading but required the production of text by the test taker in response to the input (see Figure 7).
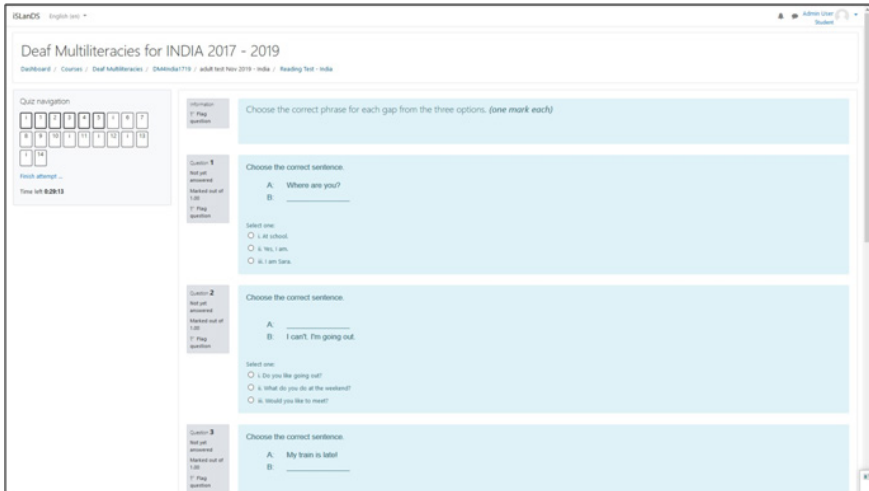
Figure 6: A reading test on the SLEND
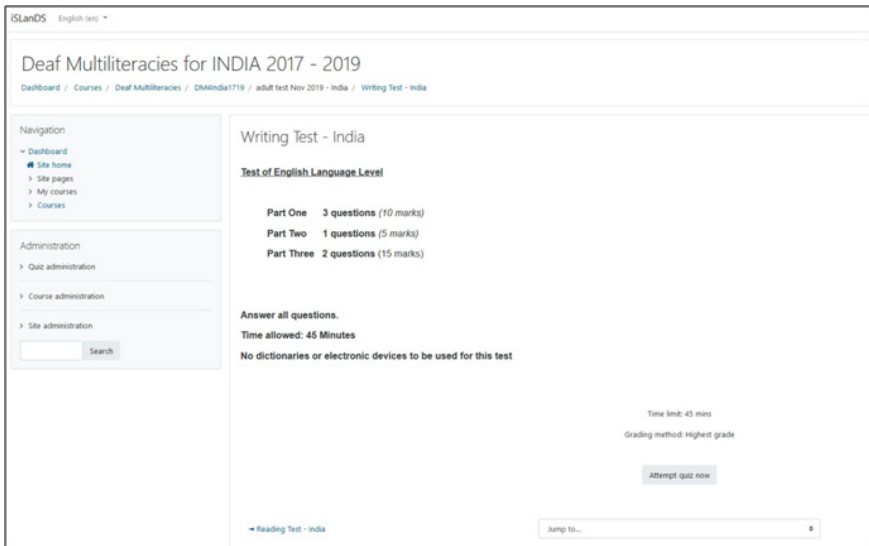
Figure 7: A writing test on the SLEND

The amount of production varied between sections, from single words or personal information (such as name) to short sentences or paragraph-length texts. The receptive test was administered first as it was felt that this would be easier for the learners. The productive test built up in task complexity towards the paragraph-level text. The tests were administered electronically over the SLEND platform which learners were used to working with. Items were tested receptively and then productively across the tests and the same objectives were present in each test so that progress against individual learning objectives could be tracked across the programme.

3.4 Localisation and administration of the tests

The tests were previewed by both the UK-based team and India-based team, who then worked on making the test more applicable to the learners. First, they studied the learner interactions from WhatsApp in the course phase before the test to see what language functions learners were likely to use and the way in which they were used (see Figure 8).

Secondly, they altered the place names and the names of people to make them appropriate to the Indian context. Thirdly, they chose texts from settings in India which would be meaningful to the learners, for example train timetables, hotel information and signposts. Feedback from the team in India led to changes of some selected texts or adaptations to others until it was agreed that the tests were suitable for administration.

The tests were administered using the SLEND platform (see section 3.1) accessed by the learners using their mobile devices. Extensive testing of the platform was carried out in the location using the types of devices that learners would have access to in order to ensure that the platform and the tests were fully functional for the users.

```
2015/10/14, 06:05 - ███████████████: I am TN and studying peer tutee at
Trissur in Kerala. I am from Kozhikode in Kerala. I am feeling good class
and interesting learn English but remember different. I am trying learn
English. I very like sign video.
2015/10/14, 06:11 - ███████████████: I am Sc
I am studying in P2P at Trissur in Kerala.
2015/10/14, 06:17 - ███████████████: I am LPD from palakkad.
Doing peer 2 peer at silent global foundation in chavakkad, trichur.
2015/10/14, 06:21 - ███████████████: My name is YKV from C.G.
Peer to Peer by Aru in Indore..
2015/10/14, 06:28 - ███████████████: I am HA..I am from thrissur..I am
student p2p from thrissur.
2015/10/14, 06:34 - ███████████████: I am SC from Calicut in Kerala. I am
studying in P2P at Chavakkade, Thrissur
i'm using learn English and sign language video. I glad to learn.
2015/10/14, 06:36 - ███████████████: I am AS from kozhikode in Kerala. I am
studying P2p tute in Thrissur. I am using learn English and Sign language.
```

Figure 8: An example of a WhatsApp conversation among students from the initial phase of the course

3.5 Lack of a control group

During the development of the project, the issue of setting up a control group was raised since it is apparent that any type of teaching intervention is likely to produce improvements in a group of learners. The problems with using control groups in education research include the tendency for the difference between the intervention group and control group to disappear over time (Lemons, Fuchs, Gilbert & Fuchs 2014), and the ease with which participants in field research may withdraw (McKillip 1992). Discussions with those members of the project team familiar with the context quickly determined that while the use of a control group may be methodologically desirable, it was pedagogically unethical. Current teaching practices for the deaf in India are almost non-existent, with deaf students frequently taught alongside hearing students with no accommodation made to facilitate access, including little or no provision for the use of sign language in the classroom. It was therefore decided that the project would go ahead without a control group to ensure that all participants had the opportunity to benefit from the project.

4 Methodology and results

Research was carried out in a quasi-experimental study. Because the study did not have a control group (see section 3.5), the current research

should be viewed as an exploratory study of an innovative and ground-breaking approach in the context.

Despite there being a large number of participants in the study (50+), only 17 completed the pre, post and delayed post-tests. The pre test was administered prior to the start of the programme while the first post-test was administered immediately upon the conclusion. The delayed post-test was administered three weeks after the end of the course.

The process used to evaluate and mark the learners' answers in the online platform is described by Fan (2018), the project's PhD student. She explains that as she was the only marker for the tests, she not only marked the tests by hand using reference answers and marking criteria but also ensured the reliability of her evaluations through two further means:

> First, I adopted the item-level marking [which is] considered as more reliable than the whole-script marking. With the help of the default feature of [the online] platform, all the respondents' answers to each item were shown automatically together for easier comparison [...] Second, I went through the scripts twice and made necessary corrections to the marks. If new alternative answers emerged, I always reviewed those previously marked and checked if the same or similar answers appeared unnoticed before. If marking errors existed, I marked again and adjusted the scores. The platform recorded the history of overrides and marking comments for later review. [...] After the marking, the final mark for each learner was exported from the platform automatically in the format of an Excel spreadsheet.
>
> (Fan 2018: 72)

The following sub-sections present the results for each of the three research questions in turn.

4.1 Research question 1 - Learners' gains in overall scores across all three stages of testing

In order to answer RQ1, pre/post/delayed-post scores were examined in terms of descriptive statistics and inferential statistics.

In the pre-test, there were quite a few students in the lowest quartile of numbers, but in the post-test, there was only one student in the lowest quartile. The mean performance rose from the pre-test to the post-test for all candidates, including the 17 candidates who took all three tests (see Table 3). For those who took the delayed post-test, the mean score

fell slightly. This may be due in part to the length of time between the post-test and delayed post-test, but it is also influenced by the fact that a number of candidates on the delayed post-test did not complete the writing section which impacted on their overall scores.

Table 3: Means for test takers across all three tests

	Pre-test (n = 43)	Post-test (n = 43)	Delayed Post-test (n=17)
Mean overall	23.8	30.6	33.3
Overall mean for candidate sitting all three tests (n = 17)	27.0	33.8	33.3

There were differences between the various centres, but four of the five groups managed to achieve similar results by the end of the course (see Figure 9). Three of the groups (Indore, Combinatoire and Vadodara) improved their performance considerably.
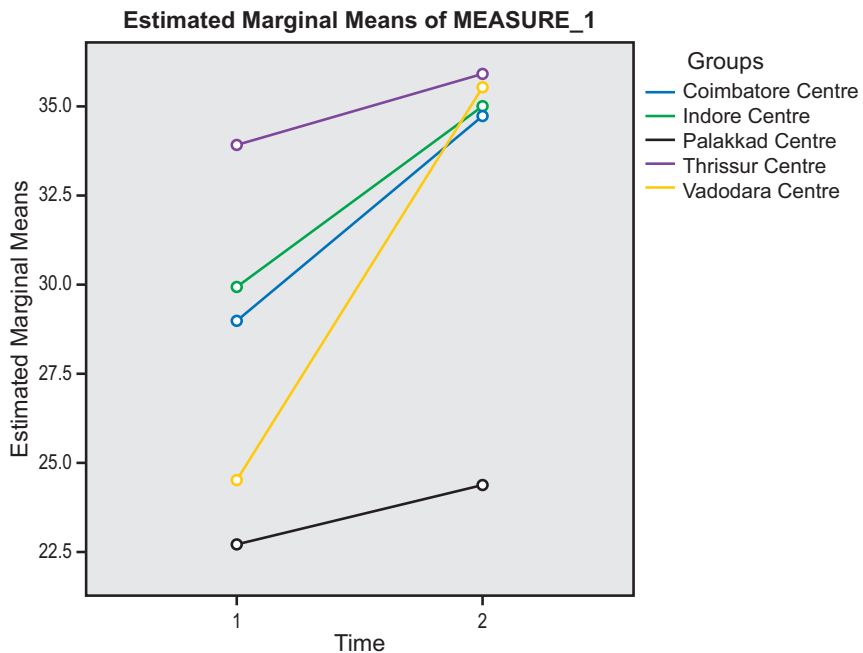
Figure 9: Trajectory of learners' results in the five centres

As a Kolmogorov-Smirnov test showed normal distribution, a one-way repeated measures ANOVA was conducted to compare test scores on the pre / post and delayed post-tests. The means and standard deviations are presented in Table 4.

There was a significant effect for time [Wilks' Lambda=.24, F(2, 15)=23.76, p<.00, multivariate partial eta squared=.75.].

Table 4: Descriptive statistics for pre / post and delayed post-test scores

	N	Mean	Standard Deviation
Pre-test	17	27.05	9.37
Post-test	17	33.82	9.02
Delayed post-test	17	33.38	10.33

The results demonstrate that the teaching on the course did result in a significant improvement in the candidates' test scores, most likely between the pre and post-tests. It is particularly interesting to note that although there is a decline in the overall mean between the post-test and the delayed post-test, this is fairly minor and suggests that there has been a sustained long-term effect on the participants.

Post-hoc tests were carried out using paired-sample T-Tests to look at the changes between the three tests. A Bonferroni adjustment for repeated tests was applied (p= 0.02). The results showed significant improvement in reading scores between pre test (mean=27.05, SD=9.37) and first post-test (mean=33.82, SD=9.02) (p<0.00, t=6.79). No significance was found between the post-test and the delayed post-test but significance was found between the pre and delayed post-test (mean=33.38, SD=10.33) (p<.002, t=3.58). The effect sizes on both pre to post and pre to delayed post-test were also found to be very large (pre to post r=0.86, pre to delayed r=0.67).

4.2 Research question 2 - Learners' gains in the receptive and productive tests

Across the reading and writing sections of the test, candidates showed an increase in scores between the pre- and post-test. On both sections of the delayed post-tests there was a slight decline but the scores still demonstrated an increase over the performance on the pre-test, particularly in writing (see Table 5). This is especially interesting given that a number of the delayed post-test candidates did not complete all tasks on the writing section.

Table 5: Means for test-takers by section (n=17)

	Pre-test	**Post-test**	**Delayed post-test**
Reading section	14.32	17.18	16.94
Writing section	12.73	16.71	16.44

A one-way repeated measures ANOVA was conducted to compare test scores on the pre / post and delayed post-tests for reading. The means and standard deviations are presented in Table 6.

Table 6: Descriptive statistics for pre / post and delayed tests

	N	**Mean**	**Standard Deviation**
Reading			
Pre-test	17	14.32	3.84
Post-test	17	17.12	4.07
Delayed post-test	17	16.94	4.78
Writing			
Pre-test	17	12.73	6.92
Post-test	17	16.71	5.71
Delayed post-test	17	16.44	7.16

There was a significant effect for time for reading [Wilks' Lambda=.64, $F(2, 15)=4.22$, $p<.04$, multivariate partial eta squared=.36.] and for writing [Wilks' Lambda=.37, $F(2, 15)=12.72$, $p<.001$, multivariate partial eta squared=.63.]. The results for both reading and writing suggest that there was a significant impact over time and that for writing this was a strong effect.

The results of the paired-sample T-Tests showed significant improvement in reading scores between pre test (mean=14.32, SD=3.84) and first post-test (mean=17.12, SD=4.07) ($p<0.01$, $t=-2.89$). No significance was found between the post-test and the delayed post-test but significance was found between the pre and delayed post-test (mean=16.94, SD=4.78) ($p<.02$, $t=-2.40$). The effect sizes on both pre to post and pre to delayed post-test were also found to be large (pre to post $r=0.58$, pre to delayed $r=0.51$).

Similarly for writing there was significant improvement in reading scores between pre test (mean=12.73, SD=6.92) and first post-test (mean=16.71, SD=5.71) (p<0.00, t=-5.21). No significance was found between the post-test and the delayed post-test but significance was found between the pre and delayed post-test (mean=16.44, SD=7.16) (p<.01, t=-2.94). The effect sizes on both pre to post and pre to delayed post-test were also found to be very large (pre to post r=0.79, pre to delayed r=0.59).

The above results suggest that despite the dip in the means by the time of the delayed post-test, the learners maintained significant levels of improvement and, as indicated by the effect sizes, these are likely to be maintained. It is also noticeable that the effect sizes in writing are higher than those in reading, suggesting that the course had a particular impact in this area.

4.3 Research question 3 - Progression across CEFR levels

Figure 10 shows how candidates progressed across the CEFR levels on the course. Items on the tests were allocated a CEFR level according to the level of the 'can do' statement that the item represented, the level of the lexis involved (based on English Profile 2015), and the function/ structure of the item. This enabled candidate scores to be allocated to a CEFR band. In the pre test, two candidates were below level A1 (A0) while the majority of the candidates fell into the A1 band. Five candidates were allocated to band A2. The number of candidates who achieved the A2 threshold scores rose in the post and delayed post-tests. The fact that the number of A2 performances increased in the delayed post-test potentially supports the effect size, as learners may have still been consolidating their knowledge and using the input in their daily lives following the course.

Of the six candidates who scored within the A1 range in both the pre and delayed tests, two demonstrated impressive improvements in their scores while of the five candidates who achieved A2 grades in their pre tests, four demonstrated large improvements. Overall, 12 out of the 17 candidates strongly increased their scores between the pre and delayed tests, reinforcing the effect size calculations stated above. The course clearly had a beneficial impact on participants in terms of their English language abilities.
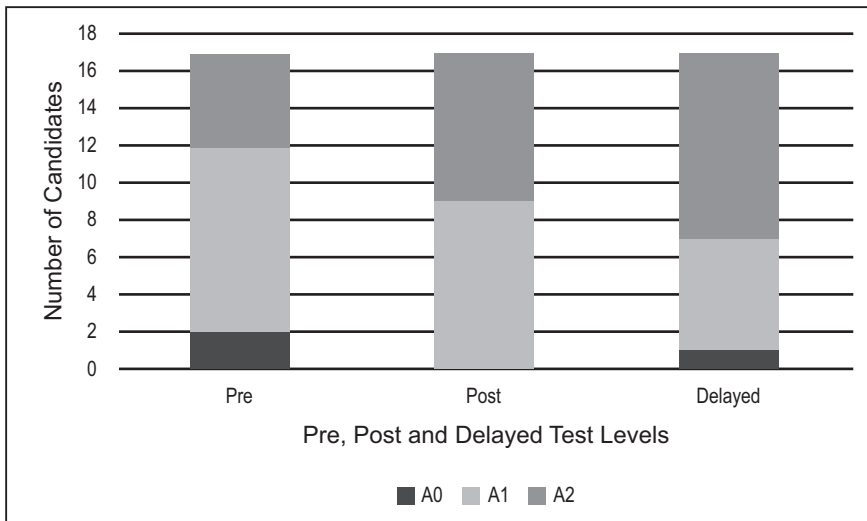
Figure 10: Changes in CEFR levels across the course

5   Discussion

The most pleasing feature of the assessment results was that learners demonstrated development on the course, in terms of both improvement on the test scores and progression from A0 to A1 and A2. Although delayed post-test data was only available for 17 participants, there was good engagement with the pre and post-tests (n=43) and these tests indicated positive improvements among the test takers. The figures from Table 3 suggest that the participants who went on to do the delayed post-test were the stronger learners and had all 43 completed the final assessment the overall mean would have dropped, as might be expected.

5.1 Engagement with materials / assessments

The learners engaged well with the course and remained motivated and involved right up to the end, as the numbers of learners taking the post-test indicate. This suggests that the learners found the content, teaching and materials motivating and relevant to their needs. Feedback from the peer tutors suggests that almost all of the syllabus objectives set out in the pre-planning stage were covered during the course, albeit through the process of exploring learning objectives in the negotiated syllabus.

5.2 Productive gains

The participants demonstrated gains in both reading and writing. The learners' improvement in productive skills was even higher than their

receptive skills, because the course facilitated more writing practice than they were used to (Fan 2018: 223). Reading scores started higher in the pre-test and remained higher in each assessment across the course, suggesting that the learners improved but were stronger in this skill from the beginning. By contrast, as shown in Tables 5 and 6, writing scores lagged behind reading in terms of the overall means but the average performances also showed more increase across the course. As stated above, both reading and writing gains between pre and delayed post-test were found to be significant and demonstrated large effect sizes, suggesting that the training in writing in particular had had a major impact on the learners. However, the writing results also demonstrate much higher variations in terms of standard deviation, suggesting that of the two skills, writing was the skill in which the quality of responses had the most range.

In terms of the results, the team were not surprised to see both the variety of scores in writing and that scores were consistently lower than those achieved in reading. As a productive skill, writing usually demonstrates lower scores in assessments than reading. What was surprising in terms of feedback was the fact that the writing test was one of the reasons cited for the drop off of respondents from the delayed post-test.

Their learning was largely retained after the intervention period. The 17 learners scored roughly the same in the post-test and delayed post-test. Each centre showed improved post-test scores, especially Vadodara. The centres with the lowest and highest pre-test scores (Palakkad and Thrissur, respectively) showed the least improvement. As Fan (2018: 224) explains, this may suggest that 'learners with appropriate prior knowledge, neither too high nor too low, might benefit more from the course. In this case, a screening/placement test is instrumental in enrolling learners into the right course.' Palakkad and Vadodara showed similar pre-test scores, but the post-test scores were considerably divergent (Fan 2018: 197-8). Four of the centres achieved level A2 on the CEFR.

5.3 Feedback and implications

Through the 'Peer to Peer Deaf Multiliteracies' project,[2] which ran from 2017 to 2020, we used the findings from the pilot study described herein to develop suitable metrics to enable us to assess what learning takes place. The pilot showed significant gains measured via assessment tools based

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2 See the introduction to this volume for a full description of this project.

on the CEFR, but the interviews and focus groups revealed that students' increasing competence with 'real life English' was not necessarily captured with the pre- and post-tests. Because Deaf Multiliteracies intended to effect change in educational systems, it was necessary for the project team to optimise meaningful measurements of the learning, so a delayed post-test as well as portfolio assessments were added (see Pal, Webster & Zeshan, this volume). The team also considered how much the participants were being asked to write in the tests, and how to match the assessments more closely to the content that was being delivered by the peer tutors.

Assessment via an externally recognised and known framework is highly important, not least because it is crucial for people's employability and life chances. Deaf Multiliteracies continued to adapt the CEFR but also explored metrics that could be used to document participants' ability to manipulate multiliteracies, sign languages, and real-life texts. Maddox (2015) showed how the validity of test scores is called into question if test items are not carefully adapted to local circumstances in developing countries (see also Maddox, Zumbo, Tay-Lim & Qu 2015). In the pilot, attention to some skills was missing from the SLEND content, while other skills adapted from the CEFR need further adjustment and crystallisation through more repetition and practical exercises to meet the needs of the target group of deaf learners (Fan 2018: 226).

The pilot revealed that our CEFR-based assessment tools were not sufficiently based in 'authentic test criteria' (e.g. Elder & McNamara 2016), so further adaptations to the CEFR were required. The team used pre-, post- and delayed post-tests with these adaptations to measure the educational gains of the adults. The analysis of the test data was able to benchmark progress by all deaf learners against the CEFR as a general standard. Deaf Multiliteracies also aimed to work with young deaf children, for whom the CEFR is not applicable, so the team developed a different approach for these learners, drawing on the 'Language Ladder' (Department for Children, Schools and Families 2007). In addition, the teachers of both the adults and children used portfolio assessments (Kim & Yazdian 2014) to track their development of multiliteracies and sign language skills. Portfolios were adaptable enough to suit the project's locally contextualised real literacies approach, support the teachers with lesson planning, and include the students' own perspectives on their learning. UK-based researchers worked with in-country research assistants to develop these monthly portfolio assessments, which were analysed to deduct suitable metrics that served as indicators of learning and could be applied throughout the learning interventions. Fan (2018: 226)

notes that 'from the perspective of developmental evaluation, the outcomes scrutinised via standardised tests [...] are not the end of the evaluation; instead, they are the starting point. It is not the aim to make a final decision of whether the course is effective or not; instead, through evaluation of its effectiveness, it assesses the previously-taken actions, and uncovers and informs the future developmental route and actions.'

6   Conclusion

This chapter has explored some of the quantitative data arising from assessments of a group of deaf learners in India who participated in a pilot peer-to-peer English programme. The pilot project tested a deaf-led teaching framework based on 'real life English' that enabled the tutors and learners to develop their course collaboratively. To measure the learning and generate quantitative evidence, the project team used the CEFR and a functional approach to language in order to create benchmarked assessments. Like the course itself, the pre-test, post-test and delayed post-test focussed on language that was meaningful to the learners in their everyday lives. The results of these tests indicated that there were learning gains across the cohort in both reading and writing, but some learners did not engage with the writing test. In addition, the CEFR-based assessment tools required more modifications to match them to appropriate test criteria. In the larger project that followed this pilot, the team made adjustments to the writing test to increase the deaf learners' involvement with it.

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Appendix

Syllabus

NOTE:
YELLOW- SLEND & WHATSAPP
GREEN- WHATSAPP
BLUE- SLEND

Can do statements	Functions	Example exponents	Lexis
Can understand short, simple text messages. *Can read very short, simple texts. (Original statement in CEFR)*	Giving information Locating key information Making arrangements Saying hello and closing	I'm_____ Class is on Friday, 10 am Come on 10 July See you Friday. What time shall we meet? Hello/Hi/How are you? Thanks for the information See you soon/ then, BYE	See A1 of the English Vocabulary Profile (http:// vocabulary. englishprofile. org/) **Lexical fields** Classroom language (e.g. how do you spell? I don't understand. Etc.) Familiar countries & nationalities (e.g. Britain/ British, America/ American, China/Chinese, Europe/ European, Asia/Asian)

Can interact in a simple way provided the other person is prepared to assist and help me formulate what I'm trying to communicate. *Can interact in a simple way provided the other person is prepared to repeat or rephrase things at a slower rate of speech and help me formulate what I'm trying to say.*	Congratulating Provide basic information Reminding Greetings Farewells Social exchanges Making arrangements Giving an opinion Express doubt Reassuring	Well done! You can buy stamps at the post office. Don't forget... Good morning/ afternoon etc Bye / Goodbye Happy birthday! See you tomorrow/on Wednesday I think... Well, I'm not sure. Don't worry (about)...	Family relationships (e.g. father, mother, brother, sister, grandfather, grandmother, uncle, aunt, cousin) Family occasions Providing personal information Simple stative verbs (e.g. live, to be (am, is, are)) Descriptive adjectives (e.g. big, small, old, young, happy, sad, hot, cold etc.) Comparative and superlative adjectives Hobbies and activities Colours Body parts Clothes Labels and packaging Tickets and timetables Signs and notices Food and drink House vocabulary
Can understand familiar names, words and very basic phrases for example on simple notices in most common everyday situations. *Can understand familiar names, words and very basic phrases for example on simple notices and posters or in catalogues.*	Understanding information Inferring meaning from ellipted phrases (e.g. No smoking = do not smoke here)	Drinking water No smoking Toilets Staff only	

Can ask and answer simple questions in areas of immediate need or on very familiar topics. *Can ask and answer simple questions in areas of immediate need or on very familiar topics.*	Stating likes and dislikes Stating preferences Offering Inviting Requesting Asking and answering questions about self and others Telling the time Requesting information Apologising Agreeing	Can I have…? Please I'd like… Would you like (to)… What's your/the address…? Are you/they? Is he/she? Do you/we/ they? Is he/she Are you? Did you/they? What do /what does? Do you know…? Sorry, I don't know. I'm sorry. Okay / OK	Holidays, leisure activities and entertainment Numbers Time (days, weeks, months, seasons) Basic jobs Transport Familiar geographical features Public spaces & equipment (park, playground, beach etc) Weather Technology (phones, internet, computer, camera and associated verbs (scroll, click, attach etc.) Action verbs (look at/for, watch, wash, watch, etc)
Can ask people for things and give people things. New	Asking for and providing personal information	What's your/the e-mail address… Can you add me (on WhatsApp)? Can you pass the…? Where are you staying?	

Can handle numbers, quantities, cost and time.	Asking how much/many Asking about the price ==Asking for the time==	==This is/These are..has / have== ==It is...== ==They are...== ==There is/are...== ==Nick's book (Possessive 's)== ==Personal subject pronouns== ==Possessive adjectives== How much/ many...? How much is...? How long...? (time/distance)	Verbs to request, offer, invite etc (e.g. can/would) ==Verbs of communication (speaking, signing, tell, ask, agree,== argue) Verbs of cognition (believe, think, remember)

Can get an idea of the content of simpler informational materials and short simple descriptions, especially if there is visual support. *I can find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus and timetables and I can understand short simple persona letters.*	Locating key information		
Can follow short, simple written directions.	Understand simple instructions / directions Understand how to use a website	Get a taxi / train / bus Get off at... Turn left/right Go straight on Scroll up/ down Click on... On the left/right	

Can describe where I live and people I know in short simple phrases and sentences. Can use simple phrases and sentences to describe where I live and people I know.	Describing people Describing places Talking about family relationships Comparing things	How old...? I am...he/she is...you/we/they are.. I/you/we/they have... He/she has... I/you etc. had X is bigger than Y X is the biggest....	
Can link words or groups of words with very basic linear connectors like *and, then* or *because* New	Link simple ideas in written text using linear linkers	I went to the bank and the office I can't go because...	
Can write simple phrases and sentences about themselves and imaginary people, where they live and what they do. *Can write a short, simple postcard, for example sending holiday greetings.*	Talking about frequency Describing hobbies/ interests Describing jobs Describing abilities Talk about your life and when things happened	Always/ sometimes/ often/never / every I'm... I like/enjoy... I play/do... I can/can't... I went... I worked/ studied...	

Can ask for or pass on personal details in written form (e.g. personal details such as filling in name, nationality and address on a hotel registration form). *Can fill in forms with personal details, for example entering my name, nationality and address on a hotel registration form.*	Giving personal information in written form	First name: Family name: Date of birth: Nationality: Address: Passport number:	
Can identify important unfamiliar words and use strategies to find the meaning of these unfamiliar words (e.g. dictionary, thesaurus, online search)	Confirming understanding		

Can ask appropriate questions to overcome gaps in communication.	Checking understanding	What does X mean? What do you mean by X?	
Can inform a conversational partner about gaps in communication	Repairing a miscommu-nication	I didn't understand... I don't know what X is. Can you spell that? Can you write that down for me?	
Can talk about one's own level of English	Giving information Describing language ability	I know a little English. I can write X but not Y I need to learn more English for X I would like to know more about X I don't know the English word for X	

Tracking learning with primary school children in a deaf school in India

Nirav Pal, Jenny Webster and Ulrike Zeshan

1   Introduction

This chapter analyses the progress of children's learning in a primary school for deaf children in rural India. This research is part of the three-year 'Peer to Peer Deaf Multiliteracies' (P2PDM) project, an international partnership with members in India, Ghana and Uganda, but this chapter focuses only on the Indian context. The quantitative analyses presented here aim to provide a multi-faceted picture of learning over a two-year period. Data from a series of competency tests shed light on three aspects of the learners' progress: their involvement, their achievement, and their accuracy. In addition, portfolios of children's work are used to present case studies of learning in relation to a range of different skill areas (including life skills in addition to literacy and ICT training), thereby providing a detailed look at how these skills develop over time.

The chapter has four main sections. In section 1, the school that hosted the classes is introduced, along with the research project and its approach to teaching and learning. Section 2 describes the methodology used to collect and analyse the data, which are derived from two groups of learners who had either spent some time in the school, or had arrived recently. The quantitative testing data is analysed in section 3 of the chapter, and a conclusion is presented in section 4.

1.1 Happy Hands School for the Deaf as a learner-centred environment

The children's classes were held at Happy Hands School for the Deaf (HHSD) in the village of Sindurpur in Sonepur District, Odisha, which was established by a local charity, the Rural Lifeline Trust, in 2016. HHSD aims to provide deaf children with education and accessible communication through Indian Sign Language (ISL). The school consists almost exclusively of deaf staff members including deaf teachers and deaf caretakers. Any hearing staff members are required to learn and use ISL, which is the medium of communication at the school. The school follows a Sign Bilingual approach (Swanwick & Gregory 2007; Knight & Swanwick 2013) adapted to the local circumstances, and teaches literacy in English along with ISL.

Because everybody at HHSD signs, the deaf students can communicate freely with the staff whenever they want or need to, and can interact with their peers without any fear of isolation or discrimination because the language used in the school environment is visual and accessible to them. For newer students who do not know ISL, it is often the case that first language acquisition is delayed, because they were used to communicating with friends and relatives using home sign (Goldin-Meadow 2005). Following Humphries and colleagues (2014), the policy at HHSD is to first provide them with a sign language, rather than a written language. After they know some ISL, they are able to start developing their linguistic skills, by using their ISL skills to acquire literacy in written English.

The eco-system of learning at HHSD is built on the following five principles that aim to ensure a learner-centred environment: deaf-led, sign language-based, interactive, accessible, and skill-oriented:

– *Deaf-led:* In other schools, many teachers working with deaf pupils do not have familiarity with deaf culture or deaf identity. They lack an understanding of, for example, the value of visual materials for deaf learners. At the school and in the research project, the deaf teachers create lessons, visual materials, and learning strategies that are meaningful to their learners by drawing on their deep personal knowledge of the needs of deaf children.

– *Sign-language-based:* All of the teachers and students use ISL. This enables the students to enjoy a fully accessible environment where they can directly communicate with their teachers and freely socialise with their peers on a basis of equality. The early development of sign language skills has been found to contribute significantly to both the levels of and rate of growth in literacy abilities such as word identification, and this is the case regardless of whether a child acquires these skills from signing parents or signing teachers (e.g. Allen & Morere 2020).

– *Interactive:* When teachers do not know sign language, it is challenging for them to interact with deaf learners, and they are less able to understand and respond to the needs of these learners. Teachers who are able to communicate with deaf learners directly in sign language have the ability to provide them with meaningful guidance, and build their confidence and decision-making skills. Receiving advice and instruction in their own visual language reduces deaf learners' apprehension about approaching their teachers, and gives them valuable experience in interpersonal communication.

– *Accessible:* The classroom and the learning activities are designed by and with the learners to build a foundation of multiliteracies for

use in the real world. Students in other schools are often required to practise reading and writing words, sentences, and texts that are not necessarily connected to the context of their lives. This means that the learning is likely to be less interesting and more forgettable. On the other hand, games and field trips are interactive, memorable and interesting ways to facilitate practice in such a way that it feels like an effortless side effect of a fun and meaningful activity. The arrangement of the classroom and the use of a range of visual and tactile materials also contribute to the accessible context. Deaf learners require full visual access to their teacher and classmates, so the room is typically arranged in a U shape for optimal use of visual communication and learning.

– *Skill-oriented:* In many Indian schools for the deaf, the students find it difficult to imagine what they want to become in the future, because there are few if any deaf teachers or other deaf role models in the learning environment. It is common for deaf learners in such schools to develop the belief that to be a skilled professional, one must be a hearing person. However, at HHSD, the learners have deaf teachers to motivate them as role models who use their same language, belong to a deaf culture, and have a deaf identity. The students are therefore able to equate being a deaf signer with being a skilled professional. This contributes to an empowering philosophy that increases their confidence and motivation, and opens up many possibilities for them. Therefore, the school takes a holistic and integrated approach to skill development, equipping students not only with literacy, multiliteracies and ICT abilities, but also with world knowledge, meta-linguistic awareness, emotional intelligence and interpersonal skills. The analyses in this paper are focused on English literacy.

1.2 The Deaf Multiliteracies approach

In the Peer to Peer Deaf Multiliteracies (P2PDM) project, academics in the UK started working with HHSD in 2017, along with other organisations in India, Ghana and Uganda. By engaging deaf learners in everyday multiliteracies, the project aimed to inform a curriculum and methods that match deaf children's skills and practices, and develop ways to measure their literacy progress. The deaf-led approach used in the project, which harnesses sign language, peer learning and deaf empowerment, is mirrored by the eco-system of learning at HHSD.

The teaching and learning approach in the Deaf Multiliteracies project has similarities with a *universal design* of accessibility (Mace 1998). In contrast to the traditional notion of accessibility, which is that there is a

shared reality that some people can enter more easily than others, universal design envisages accessibility as something built into an environment or system from the very beginning, so that access can be enjoyed by as many people as possible (Mace 1998). When universal design is applied in educational contexts, classrooms and learning materials are constructed for maximal accessibility in multiple formats involving for example visual images, sign languages, subtitles, transcripts, and digitisation. However, the project's approach also recognises the differential realities that deaf sign language users negotiate, and crucially, places the entire agency for the educational process in the hands of deaf peer tutors and learners (Zeshan et al., forthcoming). In the P2PDM learning spaces, tutors and learners co-create an environment that is motivating and meaningful for them (Fan 2018). This is related to the push for autonomy among disability communities, who increasingly refuse to accept a passive role and a situation where non-disabled people are making the decisions about their educations, occupations and social lives (e.g. Charlton 1998).

For deaf people in the Global South, education is still largely controlled by non-deaf practitioners who have no personal experience of the kinds of complex linguistic and cultural issues that deaf people must manage on a daily basis (e.g. McEwan 2020). Therefore, a vital component of the design of this project has been to prioritise the agency of deaf people and harness their expertise rather than opting for educators with formal qualifications, who are almost all non-deaf. In other words, deaf people's agency and expertise have been the central design features of the project. This has resulted in a deaf-led learning programme that allows deaf students to gain multilingual, multimodal and multiliteracies skills, and facility with a wide range of semiotic resources, on their own terms with members of their own communities in a constant co-creation of knowledge.

Assessment in this context also differs from conventional testing as usually carried out in schools. The research team aimed to build children's meta-linguistic skills and multiliteracies toolkit, and develop their ability to thoughtfully manage these communicative resources (Zeshan et al., forthcoming). Hence the assessments through tests and portfolios were intended to facilitate an exploration of how deaf children engage with knowledge and skills through a variety of modalities and languages.

2   Methodology

This section describes the data and the method used to analyse how the students progressed in their learning during the project period. First, the

rationale and development of the method are presented in section 2.1. Next, section 2.2 introduces the two main groups of deaf learners whose data was evaluated: children with more experience at the school, who had started classes in 2016 and 2017, and children who had joined the school more recently, in 2018. Finally, section 2.3 describes how the testing was carried out.

2.1 Rationale and development of data collection methods

The methods presented here for collecting and analysing the data were developed in the Peer to Peer Deaf Multiliteracies project (2017-2020) by expanding in several ways on the findings from the preceding pilot study on deaf literacy (2015-2016). The pilot study, which focused only on adults and did not include children, measured adult learners' progress using pre-tests and post-tests that were based on the Common European Framework of Reference for Languages (CEFR; Council of Europe 2001). Using this framework, the team found a significant increase in their English literacy skills (Gillen et al. 2016), but also concluded that the tests did not capture the whole range and complexity of developing skills (Fan 2018). Within the P2PDM project, the Language Ladder was adopted to chart the language development of the young deaf children participating in the study (Department for Children, Schools & Families 2007). This assessment tool allows for more holistic ways to measure the learning, including increased abilities in multiliteracies and sign languages in addition to written language, and exploits the use of real-life texts in order to increase the ecological validity of the instrument across India, Ghana and Uganda (Maddox 2015).

In conducting assessments with deaf children based on the Language Ladder approach (see details in section 2.3), the team's priority was nurturing the interactive process of learning, rather than establishing individually testable outcomes and measuring children's ability to produce 'correct' English. Hence the objective was not to administer a pre-determined test with criteria for passing. Instead, tests consisted of a variety of – often playful – activities, which were designed in the same way as other learning activities, so that the children could be assessed without feeling under pressure from formal testing.

2.2 The two groups of learners

At HHSD, three groups of children were taught during the project period, and all three groups participated in the research project. However, the group of the youngest children who entered the school most recently is not included in this chapter. As most children who come to HHSD have

grown up in non-signing families and have either not attended school at all or have had no positive experience of successful schooling, the first year focuses on getting used to schooling and learning Indian Sign Language (ISL). Hence the other two groups are more relevant to the aims of this chapter because they had started producing a much wider range of schoolwork.

The group referred to here as 'the 2016 cohort' included 12 students who, by the end of the intervention, were between 7 and 12 years old, with the majority being 11 years old (see Table 1). Most of the children in this group were in their fourth year of school attendance by the end of the project.[1] The other group is called 'the 2018 cohort', and had 10 learners. However, both the 2016 and 2018 cohorts included some children who started classes in 2017. In both cohorts, there is quite a wide age range because children arrive at the school at different ages. Children are grouped into classes based on a combination of age and years of attendance at the school rather than on the basis of age alone.

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1 The first academic year in 2016-17 was very much an experimental year for the school, where teachers, caretakers and school management were all still getting used to the school environment along with the first batch of children. Hence focused learning was not yet implemented, and internally, the 2016 cohort of children was considered to be 'Class 3', with the 2018 cohort considered 'Class 2'.

Table 1: Participants in the 2016 cohort, identified by alias, gender, and age at the end of the intervention

No.	Alias name	Age	Gender
1	CP	12	male
2	DB	11	male
3	MT	11	male
4	LT	8	female
5	MS	9	female
6	RS	11	female
7	AB	11	male
8	DM	11	male
9	RP	11	male
10	LN	9	female
11	BB	7	female
12	BK	11	male

Most of the students in the 2016 cohort live in villages in the district of Sonepur; one girl lives in the city of Cuttack. Seven of the students, CP, DB, MT, AB, DM, BB, and BK, had attended mainstream school previously. RS had attended a specialist school for disabled pupils, and BB had gone to a deaf school. Four students (LT, MS, RP, DM and AB) did not have any experience of formal schooling. All of the students in this cohort started the programme at HHSD in 2016, apart from three girls (RS, BB, and BK) who started in 2017.

In terms of language competence upon entering HHSD, the students with minimal school experience did not know any sign language or written language. Two students, BB and MT, knew how to communicate with gestures. RS, who has deaf parents, knew some ISL and had some written language skills prior to joining HHSD. She knew the English alphabet and her Odia name.[2]

As shown in Table 2, the 2018 cohort had 10 students who ranged in age from 7 to 11 years old by the end of the intervention, with the majority being 7 or 8. By the end of the project, they were either in their second or in their third year of schooling at HHSD, so these learners were not only

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2 Odia is the official language of the state of Odisha.

younger overall but also had less educational experience than those in the 2016 cohort: half of the students in the 2018 cohort started classes at HHSD in 2018, but the other half had started a little earlier, in 2017.

Table 2: Participants in the 2018 cohort, identified by alias, gender, and age at the end of the intervention

No.	Alias name	Age	Gender
1	NP	7	female
2	SA	11	male
3	RB	9	male
4	JM	7	male
5	SS	8	male
6	HB	10	male
7	KH	10	male
8	DM	7	male
9	AP	8	female
10	AD	7	female

Most of the students in the 2018 cohort live in the district of Sonepur; one girl, AP, lives in the city of Jharsuguda. Three of the students (SA, HB, and AD) had attended a mainstream school in the past, and one (KH) went to a school for the deaf. Six students (NP, JM, RB, SS, DM and AP) had not been to school before. Five students (SS, HB, KH, DM, and AP) started the programme in 2018, and the other five began attending in 2017. A majority of these students did not know any signed or written language before coming to HHSD. KH communicated to some extent in gestures, and AP knew some sign language, which was taught to her by her deaf parents.

2.3 Procedures for testing

When the assessment procedures were designed, the priority was to create child-friendly tasks that did not create anxiety or pressure and did not feel like traditional assessments. The team decided to use two complementary ways to assess the learning. The first was to collect learners' portfolios on a monthly basis, after they had completed a given activity (see Pal, this volume).

The second assessment strategy was a series of multiliteracies tasks that were meaningful and familiar to the children, such as labelling

posters to put on the classroom wall, or drawing pictures and commenting on their pictures in ISL. These tasks were indistinguishable from other activities. From the children's perspective, these were just more games and outputs that they were already used to doing in class. The tasks were designed using the Language Ladder as a framework (Department for Children, Schools & Families 2007), but were specifically targeting a mix of modalities such as signing, fingerspelling, writing and drawing. Nevertheless, all tasks were also categorised as primarily targeting either reading or writing, and labelled accordingly (e.g. R1.1 for reading, W1.1 for writing; see Appendix 1 and Tables 4 and 6 below).

The Language Ladder divides competences into several levels, and assesses learning via 'can-do'- statements. In this respect, it resembles the CEFR, which is used with adult second language learners. Most of the tasks for our tests were situated at the earliest stage of the 'breakthrough level' (ibid.), which encompasses grades 1 ('I can recognise and read out a few familiar words and phrases); 2 ('I can understand and read out familiar written phrases'); and 3 ('I can understand the main points from a short written text in clear printed script'). For each task, a form was created noting the language level, the skill in the form of a can-do statement, and the nature of the task, its content and necessary materials (see Figure 1). Peer tutors prepared and conducted the tests using these forms, which had been designed by language assessment experts in the UK. Before implementation, each test was checked and commented on by the class teachers, to make sure that it was compatible with the local context and the language skills level of the children. Changes were made as necessary on the basis of this feedback.

Skill: Reading (Activity R1.4)		
Level: Breakthrough Grade 1		
Objective: I can recognise capital and small letters.		
Materials: Cards with small letters on (e.g. 'a') and cards with capital letters on ('A'). Large set for teacher Small set of individual letter cards (as above) for learners		
Activity		
Step 1 The teacher shows the students a small letter using the letter cards (e.g. 'a') and then three capital letters (e.g. A, B, H) and asks them to identify which one is the capital version of the small letter. Repeat with different letters. Step 2 Learners are given sets of cards with small letters and capital letters and asked to match them up. The activity could be done in stages (e.g. focus on 6 letters the first time the activity is done and a different 6 letters the next time).		
Response		
Full Learner is able to successfully match small and capital letters	Partial Learner is able to match most of the letters, may need help to match others	None Unable to match most letters without repetition and support
Extension #1 Writing (Activity W1.2)		
Level: Breakthrough Grade 1		
Objective: I can write or copy simple symbols		
Step 1 The teacher shows one of the capital letters using a larger word cards (e.g.'A'). Learners write in the air the shape of the smaller version of the letter.		
Response		
Full Learners are able to successfully trace out the shape of the smaller letter	Partial Learners are able to trace out the shape of the smaller letter, by imitating their peers	None Learner does not take part or the shape is not correct
Extension #2 Writing (Activity W1.3)		
Level: Breakthrough Grade 1		
Objective: I can write or copy simple symbols		
Step 1 The teacher gives out capital letter cards (e.g.'A'). Learners write out the smaller letter.		
Response		
Full Learners are able to successfully write out the smaller letter to create a readable version without prompting	Partial Learners are able to write out the smaller letter by copying from their peers	None Learner is not able to write out the shape in a readable way without support from the teacher

Figure 1: Format of assessment tasks using the Language Ladder

The tasks were compiled into three tests: a pre-test given right at the beginning of the project; a first post-test administered after one year of classes; and a second post-test that the learners took after a further eight

months. The children's first attempt at each task was evaluated and a suitable number of marks (2, 1 or 0) was recorded, in accordance with the assessment grid in Table 3.

Table 3: Assessment grid for the children's classes

	Task complete (2 marks)	**Partial fulfilment (1 marks)**	**Unable to complete task / No participation (No mark)**
Involvement *Is the learner taking an active part? Do they lead or take their cue from other learners? How much encouragement is needed?*	Learner engages fully with the activity and shows interest throughout. *Learner could help weaker students in a repetition of the task.*	Learner follows the task and involves him/ herself if prompted or copies other learners. *The learner would benefit from a repetition of the task.*	Learner needs considerable urging and encouragement from the tutor to do the task. *The learner may benefit from rehearsal time with a tutor/ stronger student before re-doing the task.*
Achievement *Is the learner able to do all the things required in the task? Do they need support to do this?*	Learner is able to complete the objectives of the task.	Learner achieves most of the aspects of the task, albeit with some tutor/peer support.	Learner unable to complete the task without staged support.

Table 3: continued

Accuracy & Range *Is the use of language accurate? Is some correction required? Does the learner bring in additional language? Does the learner use a variety of words/ phrases?*	The learner's use of language is accurate throughout the task with only minor slips. The learner uses most of the taught language and might use other language they know.	The learner is able to achieve accuracy following the correction of minor slips. Learner tends to use only the language immediately required for the task.	The learner's use of language is often inaccurate. Considerable correction needed. Learner may stick to the most basic of the language for the task.
	Direct the learner to errors. Encourage the learner to work with stronger peers to correct their work.	*Encourage the learner to look at the work of stronger learners. Encourage the learner to re-do the task.*	*Reset the task in planned stages. Use a tutor/peer to help guide the learner through the task. Repeat the task.*

2.4 Pre-test and post-test tasks in the Language Ladder

In the pre-test and the first post-test, there were six reading activities and six writing activities. The activities were the same in both cohorts, but teachers could decide to modify the way in which the activities were carried out in both groups, given the different skill levels. For instance, if an activity proved too challenging for the younger cohort, the teacher could decide to bring the activity to an end earlier. In the second post-test, the activities no longer overlap in the two groups. This is mainly due to the fact that by this time, the school was to close at short notice due to the COVID-19 pandemic. There was only enough time for two reading activities and two writing activities in each group. These were selected from a larger number of options, and the teachers working with both groups made different choices for the second post-test, taking into account the abilities and interests of the children in their group.

For the most part, the tasks across the three successive tests were not identical. For instance, W1.1 is a different task in each of the tests; a task labeled R1.3 'I can recognize familiar words' occurs in both pre-test and first post-test but the actual activity is different. Therefore, the first step in analysing the testing data was to determine which task activities involved competences that were similar enough to warrant a comparison

across tests, based on the 'can-do' statements and the way in which activities were actually carried out.

A compilation of these similar competences resulted in 14 paired test activities in total, seven each for the 2016 and 2018 cohort. The paired tasks for each cohort are listed in Table 4 and Table 6 below. Importantly, there are different combinations of pairs across the tests. Sometimes a pre-test activity is compared with an activity from the first post-test, sometimes the first post-test is compared with the second post-test, and so on. In some instances (two tasks in the 2016 cohort and three tasks in the 2018 cohort), a comparable activity could be found across all three tests.

The comparison of test results was carried out in two phases, corresponding to separate sub-sections below. Firstly, the pre-test was compared with the first post-test, and secondly, the comparison covered all three tests together.

3   Analysis of quantitative data from pre- and post-tests

The results from the two groups of learners are explored separately (the 2016 cohort in section 3.1, and the 2018 cohort in section 3.2), to evaluate what progress was made across the three stages of testing, and what other conclusions can be drawn from the data.

3.1 Analysis of data from the 2016 cohort

The paired activities for the 2016 cohort are summarised in Table 4. Three reading activities and three writing activities can be compared between the pre-test and the first post-test. This analysis is presented in sub-section 3.1.1. When looking across all three tests, there are seven paired activities, including two activities with data from all three tests. These results are discussed in sub-section 3.1.2.

Table 4 lists the number of the task item, the relevant skill ('can do') statement), and a brief description of the task.

Table 4: Paired activities across the three tests (2016 cohort)

	Pre-test	1st post-test	2nd post-test
2016 cohort Reading	**R1.2** **(I can fingerspell familiar words)** Fingerspell each familiar word and find each matching picture	**R1.2** **(I can fingerspell familiar words)** Fingerspell what is on the picture and find the matching word and place it next to the picture.	**R1.2** Fingerspelling: see pictures, fingerspell words and find matching word card

Table 4: continued

	Pre-test	1st post-test	2nd post-test
2016 cohort Reading	**R1.1** (**I can recognise familiar words**) Match the words to the pictures	**R1.3** (**I can recognise familiar words**) Place colour word cards in the space under the pictures	
	R1.3 (**I can recognise familiar words**) Draw a picture for each to show what the word means	**R1.4** (**I can understand familiar written words. I can understand a short story in sign language**) Sign a story, draw a picture, place vocabulary cards next to correct person	
		R1.5 (**I can understand a short and simple written text**) Point out any words and parts of the sentence that they know and sign them.	**R1.5** (**I can understand a short and simple written text**) Read a story about a zoo, point out any words and parts of the sentence that they know and sign them
2016 cohort Writing	**W1.1** (**I can recognise familiar words**) Write the words underneath each picture	**W1.2** (**I can write one or two simple words**) Swap their pictures, then write the names of the colours under each object	

Table 4: continued

	Pre-test	1st post-test	2nd post-test
2016 cohort Writing	**W1.4** (**I can write or copy familiar words**) There is a list of words on the side of the picture. Learners write the words into the gaps to indicate the objects. Stronger students could be asked to cover the list and write the words from memory	**W1.1** (**I can write one or two simple words**) Keep the pictures visible, but remove the word cards. Children should write from memory.	
	W1.5 (**I can write one or two simple words**) Given the handout with a few simple gaps (e.g. I am _____. I like _____ . I live in_____....). Learners write in information which is true for them	**W1.5** (**I can write a short sentence**) Write short sentences about themselves using the words from the blackboard: I play. I sleep. I read. etc. Translate what they have written into sign language	**W1.3** (**I can write a short sentence**) Work individually to write a sentence next to each object For example I see, I have, I like, I keep, I draw, etc.

3.1.1 Pre-test and first post-test in the 2016 cohort

Table 5 summarises the data from a comparison between the pre-test and the first post-test. The left-hand column shows the tasks being compared, listing the task numbers from both tests. The table then shows four different values: the average score achieved in both tests, the difference between them, and the distance between the pre-test score and the maximum possible score of 2.0 (so that for example if the pre-test average is 1.5, the distance from the maximum would be 0.5). In the large majority of paired tasks, the difference between test scores means an improvement in the first post-test, and the extent of improvement (or its reverse) can be seen in the 'Difference PRE-POST1' column. The final column shows for which of the tasks the children were starting from a lower baseline; larger distances from the maximum score in the pre-test means that the children had more room to grow in these competences, as they started out from a lower competence level.

The scores relate to the three different aspects of learning that were assessed: the children's involvement (INV), which means how eager they were to participate; their achievement (ACH), which signifies to what extent they were they able to do the task; and their accuracy (ACU) which means to what extent they used the correct language in the task. When analysing the scores, the importance of separating out these three aspects of their progress was underscored. For instance, in some cases the children's task responses in terms of language used were not accurate but they were eager and/or able to do the task, which are both essential foundations for learning that need to be captured.

In four of the tasks in the first post-test, one of the children was absent. However, this does not affect the validity of averages. The complete scores for all tests are included in Appendix 2.

Table 5: Results of pre-test and first post-test (2016 cohort)

Task	INV average PRE	INV average POST1	Difference PRE-POST1	Distance from maximum score in PRE
R1.2 - R1.2	1.75	2.0	0.25	0.25
R1.1 - R1.3	2.0	1.9	- 0.1	0
R1.3 - R1.4	1.5	1.9	0.4	0.5
W1.1 - W1.2	0.92	2.0	1.08	1.08

Table 5: continued

Task	INV average PRE	INV average POST1	Difference PRE-POST1	Distance from maximum score in PRE
W1.4 - W1.1	1.75	2.0	0.25	0.25
W1.5 - W1.5	1.17	2.0	0.83	0.83
Task	**ACH average PRE**	**ACH average POST1**	**Difference PRE-POST1**	**Distance from maximum score in PRE**
R1.2 - R1.2	0.92	1.08	0.16	1.08
R1.1- R1.3	1.17	1.81	0.64	0.83
R1.3 - R1.4	0.67	1.09	0.42	1.33
W1.1 - W1.2	0.5	1.63	1.13	1.5
W1.4 - W1.1	1.0	1.08	0.08	1.0
W1.5 - W1.5	1.0	0	−1	1.0
Task	**ACU average PRE**	**ACU average POST1**	**Difference PRE-POST1**	**Distance from maximum score in PRE**
R1.2 - R1.2	1.75	1.33	−0.42	0.25
R1.1 - R1.3	1.83	1.72	−0.11	0.17
R1.3 - R1.4	1.5	1.54	0.04	0.5
W1.1 - W1.2	0.92	1.63	0.71	1.08
W1.4 - W1.1	1.75	1.08	−0.67	0.25
W1.5 - W1.5	1.25	0	−1.25	0.75

Out of the 18 paired task comparisons, improvement in between the tests can be seen across the board, with six exceptions; these are the negative figures in the 'Difference PRE-POST1' column. When looking for an explanation for the negative figures, we observe that in fact, some of the activities in the first post-test are more difficult than the corresponding pre-test activities. In particular, confounding factors are as follows:

- Fingerspelling familiar words in the PRE task R1.2 contained only words for body parts, whereas the R1.2 task in POST1 contained a

wider vocabulary range, including words for classroom items and other general vocabulary.

– The W1.1 task in POST1 involved writing words from memory, whereas in the corresponding but simpler W1.4 task in PRE, writing from memory was possible but optional, and children could look up the words they needed to write.

– The pre-test W1.5 task was a 'fill in the blanks' exercise where the children only needed to write words into blanks to complete a sentence. However, in the W1.5 first post-test, the children were asked to write entire sentences by themselves, which is clearly much harder. The children were not yet able to do this, hence achievement and accuracy are 0 in the first post-test, although all children were happy to engage in the task (INV = 2).

These observations help to explain the negative figures highlighted in yellow in the table. Other negative figures are marginal at -0.1 and -0.11.

In order to interpret the significance of improvements in between both tests, we need to consider a combination of the extent of improvement across three parameters, the skill level reached in terms of absolute figures, and the initial distance from the maximum score. Some interesting patterns emerge from this.

Considering the levels of involvement, we can see that in the pre-test, this tends to be lower for writing tasks. Two out of three scores below 1.5 in INV relate to writing, indicating that these children are somewhat less keen on engaging in writing activities at the beginning, probably because writing is more challenging than reading. However, by the time of the POST1 test, all INV figures are at or very close to the maximum, marking a definite improvement.

With respect to ACH and ACU scores, we see that the achievement scores are lower across the board at the time of the pre-test, with most of the average scores clustering around 1.0. This indicates that at the beginning, children in the 2016 cohort had needed more help with completing the tasks, which makes sense because after all, testing activities were not yet fully familiar. Despite constructing the tasks to be similar to normal classroom work, at least some of the activities would have been new for the children. By the time of the first post-test, we see clear progress in this area. For the accuracy scores, it is not possible to draw firm conclusions about improvement, partly because of the confounding factors related to the difficulty of tasks.

With respect to the initial baseline level, the figures seem to indicate no correlation between distance from maximum score in PRE and degree

of improvement. In other words, it is not the case that skills starting from a particularly low baseline generally improve more than others. Sometimes this is the case, and sometimes it is not. An example of a large improvement from a particularly low PRE score is the task pair W1.1–W1.2 (recognising familiar words). This task required the children to write basic words under pictures that they had drawn, which is more difficult than matching given words to pictures. Most of them could not do this at the pre-test. But one year later, many of the students were able to write words under their pictures, which suggests that they had successfully acquired new vocabulary during that year.

What we do see across the board in PRE scores is that a basic competence level in literacy/multiliteracies is already established in this group at the time of the pre-test. A minority of seven PRE figures out of 18 do not reach above the 50% mark of 1.0 (see figures highlighted in blue in the table). Those marks that are at or below 1.0 mostly relate to writing skills (only two relate to reading), which may indicate that writing is less developed than reading at the time of PRE. This pattern further supports the conclusion from the INV scores that writing is particularly challenging. With the exception of the outlier W1.5, by the time of the first post-test all of the average scores are above 1.0 for ACH and ACU and half of the scores are above 1.5.

3.1.2 Results across all three tests in the 2016 cohort

This sub-section looks at how the students from the 2016 cohort progressed through all three tests. The three tests are presented in the form of data graphs, in which the PRE test is in black, the POST1 test (after one year of learning) in gray, and the POST2 test (after a further eight months of learning) in white.

Comparison across the pre-test, first post-test, and second post-test is presented below separately for involvement, achievement, and accuracy. As mentioned above, the second post-test had to be modified into a reduced test with fewer activities so the white graphs in this section have comparatively fewer white bars.

Involvement

Figure 2 shows how involvement developed across the entire project period, showing the level of children's active engagement in the tasks. The finding from the PRE-POST1 results is confirmed, namely that involvement increases over time. In fact, by the time of POST2, all children score the maximum 2.0 for involvement. In some cases, the gray column

(first post-test) is already at the maximum score, and the white column (second post-test) remains at the maximum.
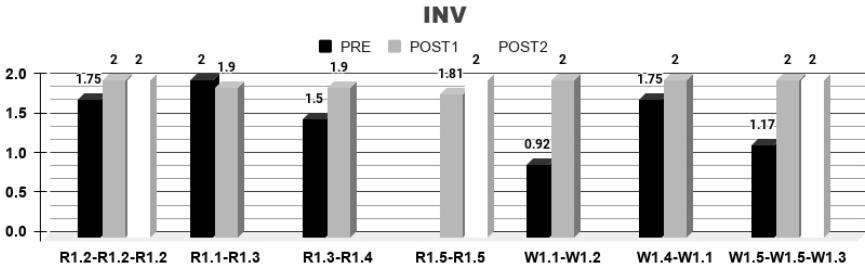
Figure 2: Involvement across three tests (2016 cohort)

This pattern validates the approach of the project that learner-centric strategies along with accessible classroom communication through sign language are effective in motivating children to engage with learning. The figures provide strong evidence that the teachers were able to sustain the children's involvement and interest across the various tasks, no matter whether the tasks were easy or difficult. Moreover, the 2016 cohort already starts from a relatively high level at the time of the pre-test, especially when compared with the level of the younger children in the 2018 cohort (see section 3.2.2). This suggests that by the time our assessment started, the children in the 2016 cohort had already benefited from the school's environment, where teachers aim to motivate children with praise, encouragement, and activities developed together with the learners, rather than through pressure and standardised testing. This approach to teaching can be described as autonomy-supportive (Reeve 2016).

Achievement

Across all tests, achievement is the aspect where we see most improvement, meaning that the children are increasingly able to complete tasks confidently on their own (Figure 3).
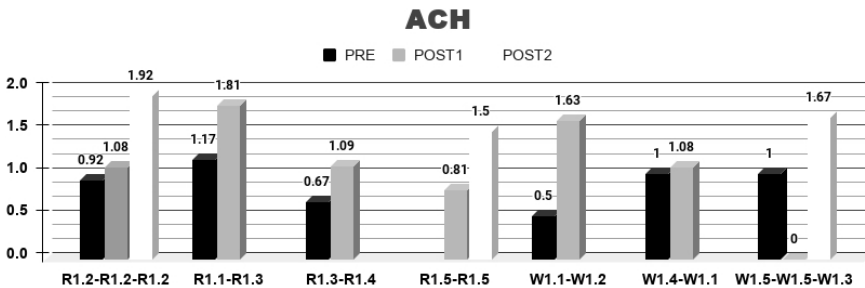
Figure 3: Achievement across three tests (2016 cohort)

Improvement in the achievement parameter is confirmed in the second post-test. Whereas initially the children were seeking a great deal of help from the teacher, by the time of the post-test, they had internalised what to do, and knew much better how to respond to the different tasks. This is likely to be because throughout the year, the teacher had been giving them questions and tasks, allowing them to practise how to respond. This experience enabled them to become more independent learners. The achievement level continues to rise for the second post-test, again suggesting that the learners had developed more autonomy.

In fact, with the exception of W1.5 in POST1, the achievement category shows a universal pattern where each test score is higher than the previous comparison score, across all three tests. The pattern in Figure 2 is evidence that over time, the children got used to being active in different activities including responding to set tasks. The improvement equally covers reading and writing activities. The white POST2 bars represent the tasks of fingerspelling words (R1.2), understanding a short text (R1.5), and writing a short sentence (W1.3).

Accuracy

The extent to which the children's test answers were correct is reflected in the notion of accuracy. This aspect therefore corresponds to the learners' knowledge and skills in the languages that they are using. Figure 4 shows the ACU scores across the three tests.
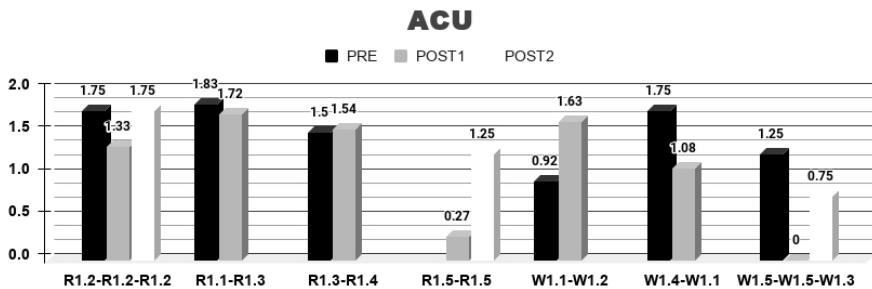
Figure 4: Accuracy across three tests (2016 cohort)

Unlike for INV and ACH, the ACU results are more mixed and there is no universal upward trend in the figures. For several of the lower-scoring POST1 tasks, this has been explained with respect to task difficulty in section 3.1.1. The POST2 figures confirm the finding that writing seems to be more difficult than reading. Looking across all three tests, some further interesting points emerge.

Firstly, the fact that the children were able to carry out these tasks reveals that they are making a very important transition from using

individual words to using complete sentences, both in reading and in writing. One set of tasks (R1.5-R1.5) involves reading a text, and another set of tasks (W1.5-W1.5-W1.3) involves writing at sentence level.

Looking at item R1.5 (understanding a short text), a large difference can be seen between POST1 and POST2 results, which indicates that most of the students could not read a five-sentence paragraph when they took the first post-test. By the time of the second post-test, most of them could read the text well or at least to some extent. Reading at the level of a text was not a task in the pre-test because the children were not ready for this level of difficulty yet. Reading for comprehension at the level of a text is an altogether different skill level because the structures of ISL and English are very different from each other. Hence reading a text requires meta-linguistic skills. The process of moving from words to sentences and texts is also reflected in some of the portfolio case studies in Pal (this volume).

The task series W1.5-W1.5-W1.3 is particularly revealing in terms of children's progression with writing English at the level of sentences. In the pre-test, the W1.5 'fill-in-the-blanks' task required the children to insert a missing word into a given sentence. By contrast, in the POST1 and POST2 tasks they were expected to write complete sentences on their own. With the new level of difficulty, all of the children scored 0 on this item in POST1, both for achievement and for accuracy. This suggests that while the children were mostly capable of writing individual words, as the pre-test version of this item required them to do, writing English sentences was still too difficult for them when they took the first post-test. However, they were able to do this to some extent by the time they took the second post-test. Even though the POST2 score is still lower than the PRE score, the skill involved in POST2 was much more advanced. While their earlier stages of learning had involved mainly individual words and signs, by the time of the second post-test they had started to read stories and deal with full sentences.

The tentative conclusion that can be drawn from these data is that over time, the teachers were able to create a positive learning environment that enabled the learners to stretch their skills. This conclusion is further supported by the fact that the rather variable ACU scores combine with universally high INV scores, suggesting that the children felt comfortable and confident enough in the classroom to try a variety of new tasks irrespective of whether they were already competent in the task or not; the children did not appear to get worried or scared by the difficulty of any task.

This readiness to take on new challenges is one of the most important factors in a positive learning environment. As there is a sizable shift from learning words to coping with full sentences, children need adequate support and a nurturing environment to make this leap successfully. The findings indicate that with the appropriate help, children's ability to write their own sentences and to read entire texts can quickly develop from 0 or near 0 to a substantial skill level.

3.2 Analysis of data from the 2018 cohort

To analyse the data from the 2018 cohort, the analysis went through the same stages as those described in section 3.1 for the 2016 cohort. The raw data and averages for the 2018 cohort can be seen in Appendix 2. Because the children in this group were younger learners who had not been at the school very long, their scores for achievement, involvement and accuracy began from a very low base.

As mentioned above in section 2.4, with respect to the testing tasks in PRE and in POST1, this cohort completed the same activities as the 2016 cohort (six reading and six writing activities), but the implementation of their activities was modified so as to be easier than for their predecessors in an attempt to mitigate the differing levels of learning experience in the two age groups. POST2 testing activities only included two reading and two writing activities and differed between the two cohorts. Table 6 shows the comparison of tasks across all three tests in the 2018 cohort.

Table 6: Comparing tasks across the three tests (2018 cohort)

2018 cohort Reading	**R1.2 (I can fingerspell familiar words)** Fingerspell each familiar word and find each matching picture	**R1.2 (I can fingerspell familiar words)** Fingerspell what is on the picture and find the matching word and place it next to the picture.

Table 6: continued

<table>
<tr>
<td rowspan="3">**2018 cohort Reading**</td>
<td>**R1.1**
(I can recognise familiar words)

Match the words to the pictures</td>
<td>**R1.3**
(I can recognise familiar words)

Place those colour word cards in the space under the pictures</td>
<td>**R1.3**
(I can read two-word phrases)
The word not matching the picture is marked with a cross in the box; the correct word that matches the picture is marked with a tick.</td>
</tr>
<tr>
<td>**R1.3**
(I can recognise familiar words)

Draw a picture for each to show what the word means</td>
<td>**R1.4**
(I can understand familiar written words. I can understand a short story in sign language)
Sign a story, draw a picture, place vocabulary cards next to correct person</td>
<td></td>
</tr>
<tr>
<td>**R1.4**
(I can recognise capital and small letters)

Match up small letters and capital letters.</td>
<td>**R1.1**
(I know the alphabet with both capital and small letters)
Find the matching small letter from among the small letter cards. Then this capital letter is removed, so that there are fewer and fewer letters.</td>
<td>**R1.1**
(I know how to use capital and small letters)

Write the same names of people and places, but change the first letter to a capital letter.</td>
</tr>
<tr>
<td rowspan="1">**2018 cohort Writing**</td>
<td>**W1.1**
(I can recognise familiar words)

Write the words underneath each picture</td>
<td>**W1.2**
(I can write one or two simple words)

Swap their pictures, then write the names of the colours under each object</td>
<td></td>
</tr>
</table>

Table 6: continued

W1.3 **(I can write or copy simple symbols)** The teacher gives out capital letter cards (e.g. 'A'). Learners write out the smaller letter.		**W1.1** **(I can write small and capital letters)** Pick up a letter and show it to the partner, who copies the letter and adds the matching small or capital letter.
W1.4 **(I can write or copy familiar words)** There is a list of words on the side of the picture. Learners write the words into the gaps to indicate the objects. Stronger students could be asked to cover the list and write the words from memory	**W1.1** **(I can write one or two simple words)** Keep the pictures visible, but remove the word cards. Children should write from memory.	**W1.2** **(I can write simple words with numbers)** Children should write the names of the objects and the number.

(left vertical label: **2018 cohort Writing**)

3.2.1 Pre-test and first post-test in the 2018 cohort

Table 7 shows the average scores for each selected item on the pre-test and first post-test, followed by the difference between the two and the distance between the pre-test score and the maximum possible score of 2. In addition, the figures highlighted in green are the cross-task averages. Eight children participated in the PRE and POST1 tests in the 2018 cohort, whereas the second post-test included 11 children. The PRE-POST1 comparable tasks include four reading tasks and two writing tasks.

The young learners of the 2018 cohort began the pre-test only a week after they attended school for the very first time, so they were starting from a very minimal level of skill. Some of the students in this cohort

lacked knowledge of Indian Sign Language (ISL), and therefore focused more on learning ISL than on writing and reading. The students in the 2018 cohort who already knew ISL were able to concentrate on developing their bilingualism.

Table 7: Results of pre-test and first post-test (2018 cohort)

Task	INV average PRE	INV average POST1	Difference PRE-POST1	Distance from maximum score in PRE
R1.2-R.1.2	0.75	1.62	0.87	1.25
R1.1-R1.3	1	1.75	0.75	1
R1.3-R1.4	0.37	0.87	0.5	1.63
R1.4-R1.1	0.87	1.12	0.25	1.13
W1.1-W1.2	0.5	1.5	1	1.5
W1.4-W1.1	0.37	1.37	1	1.63
Cross-task averages	0.64	1.37	0.73	1.36

Task	ACH average PRE	ACH average POST1	Difference PRE-POST1	Distance from maximum score in PRE
R1.2-R1.2	0.12	1.12	1	1.88
R1.1-R1.3	0.12	1.12	1	1.88
R1.3-R1.4	0.12	0.25	0.13	1.88
R1.4-R1.1	0.25	1	0.75	1.75
W1.1-W1.2	0	1.12	1.12	2
W1.4-W1.1	0.12	0.75	0.63	1.88
Cross-task averages	0.12	0.89	0.77	1.88

Table 7: continued

Task	ACU average PRE	ACU average	Difference PRE-POST1	Distance from maximum score in PRE
R1.2-R1.2	0.25	0.75	0.5	1.75
R1.1-R1.3	0.37	1.12	0.75	1.63
R1.3-R1.4	0.25	0.25	0	1.75
R1.4-R1.1	0.25	1	0.75	1.75
W1.1-W1.2	0.12	1.25	1.13	1.88
W1.4-W1.1	0.37	0.75	0.38	1.63
Cross-task averages	0.27	0.85	0.58	1.73

A first striking observation, particularly when compared with the 2016 cohort, is the low level of scores across all three categories at the time of the pre-test, which reflects the young age and inexperience of this group of learners. To some extent, this must be expected, because this group of children had not been at the school very long (less than two years). However, even under these circumstances the results are very low, particularly in the achievement category. Across all tasks, there are only a total of five individual ACH scores that were not zero in the pre-test (see the list of the individual scores in Appendix 2).

By contrast, the INV figures are slightly higher than the other categories. The figures in yellow show those tasks in PRE for which the distance to the maximum score was below 1.75, indicating a somewhat higher skill level at the time of the pre-test. With two exceptions, all these figures belong to the INV category. This confirms our earlier finding that the teachers have been able to create an environment where the children like to get involved, even as early as at the time of the pre-test.

Between the pre-test in the first post-test, we can observe a steady progress across the board. In most cases, scores improved by at least 0.75 on average across all three categories. Unlike in the 2016 cohort, there are no negative figures in these data at all, so each individual compared task had also improved. Interestingly, the rate at which the children in the 2018 cohort progress is very similar across the three assessment categories.

This is indicated by the cross-task averages: the average improvement with respect to involvement is 0.73 across all tasks, and the average improvement in achievement is 0.77, nearly the same. This close similarity is despite the fact that the achievement scores initially were much lower than the involvement scores. Average improvement in accuracy is slightly lower at 0.58, which reinforces the finding that progress with accuracy is more mixed. There is a particularly wide divergence among improvement scores for accuracy, ranging from 0 to 1.13.

The progress between PRE and POST1 can be seen even where the task in POST1 had been more difficult than the comparable PRE task. Recognising capital and small letters in the pre-test R1.4 involved a straightforward task of 'matching capital and small letters'. This is easier than the first post-test task R1.1 which involved a more elaborate game: 'the child should find the matching small letter from among the small letter cards. Then this capital letter is removed, so that there are fewer and fewer letters.' Although R1.1 in POST1 is clearly more complex, we still see improvement. The steady improvement continues in the second post-test, as we shall now see in section 3.2.2.

3.2.2 Results across all three tests in the 2018 cohort

Figures 5, 6 and 7 below show how the students from the 2018 cohort progressed through all three tests in terms of their involvement, achievement and accuracy. As in section 3.1.2, the black bars are for the pre-tests while the gray and white bars are for the first and second post-tests.

Involvement

Figure 5 shows that at the time of the pre-test, most of the children in the 2018 cohort were apprehensive or hesitant about getting involved with the tasks, and then the group made steady progress over both of the post-tests. By the time of the second post-test, the scores for involvement seemed to stabilise just above 1.5, with the exception of W1.1 in POST2, which is an outlier and achieves full marks. However, it can be argued that this task will have been easier than other tasks at the time of POST2 because the skill involved writing small and capital letters, a more basic task than the other POST2 activities. There was no comparable POST1 task for this skill. The figures for involvement do not show any difference between reading and writing tasks.

INV
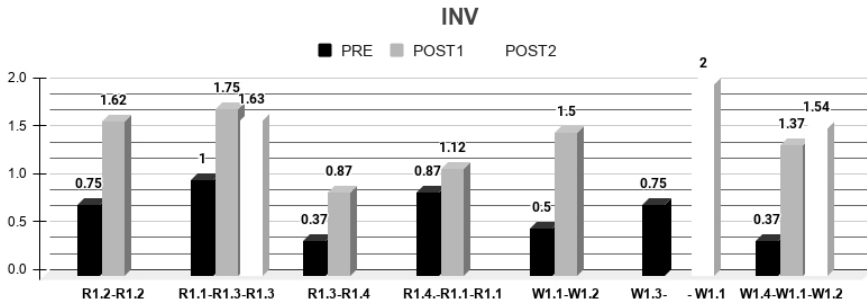
Figure 5: Involvement across three tests (2018 cohort)

Achievement

In the pre-test, the students in the 2018 cohort could not achieve the tasks and had to rely on help from their teachers. This meant that their scores for achievement were very low in the pre-test, as shown in Figure 6 (black bars). In particular, the writing tasks seem to have presented much difficulty, with two of the writing tasks having a total score of 0 in the pre-test. At this stage of their learning, the children were only just getting used to taking part in classroom activities, including responding to tasks, for the first time.

ACH
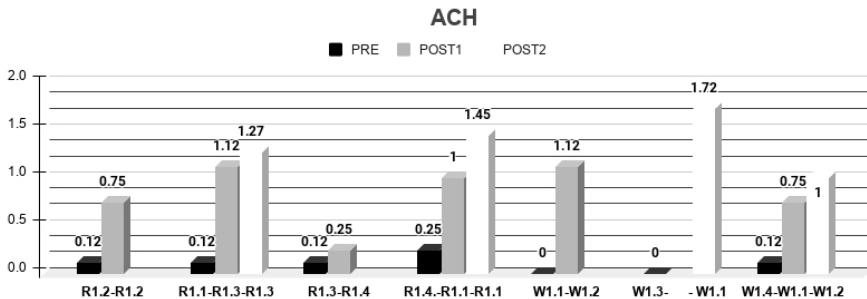
Figure 6: Achievement across three tests (2018 cohort)

In the first and second post-test, the children in the 2018 cohort become increasingly likely to achieve the tasks and require less help from the teachers. By the time of the second post-test, nearly two years after the pre-test, the children are well on their way to achieving the tasks with no or much less help from their teachers. They have clearly become more accustomed to the learning activities, and this gave them the capacity to achieve the tasks independently. Only one task, R1.4, remains very weak in POST1. This might be due to the fact that this task involves a complex mix of modalities: children were first signing a story, then making a

drawing related to the story, and then matching parts of their drawing to labels in English.

Accuracy

The 2018 cohort's accuracy patterns are similar to their achievement patterns. At the pre-test, the learners were not able to identify, write or read basic English words. However, at the first and second post-test, they showed a consistent improvement in their accuracy.
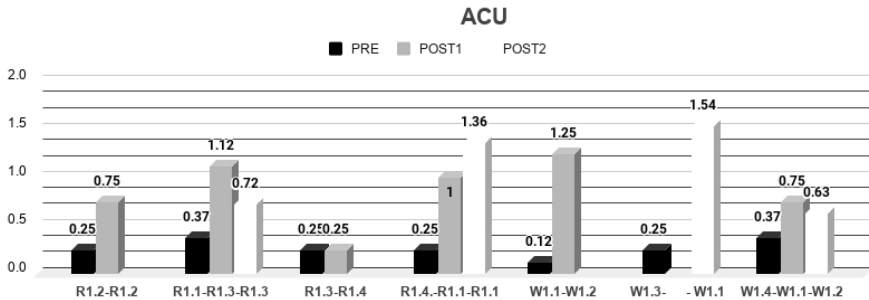
Figure 7: Accuracy across three tests (2018 cohort)

Task R1.3 was more challenging in the second post-test compared to the first. In the first post-test, the learners had to match words to each other, whereas in the second, they were faced with three words in a phrase with correct grammar and had to decide whether the word matched the picture or not. Nonetheless, there is still an overall increase in accuracy for the second post-test, which is an indication that the learners made gains in their English grammar.

Overall, the most striking result of achievement and accuracy figures is that in every instance of a comparable task, the following task scores more highly than the previous one. There is not a single instance of a later task being weaker than a previous task. Moreover, there is a more marked step forward between PRE and POST1, and a continuing but more moderate progression between POST1 and POST2 (excepting the anomalous W1.1 in POST2). Finally, just like with the achievement figures, the accuracy figures show likewise that writing tasks are a particular challenge at the time of the pre-test.

These patterns are understandable as the children's language focus during the first phase of learning tended to be ISL, but in the second phase, they moved into a mixture of ISL and written English. Hence the large leap between PRE and POST1 reflects the uptake of literacy activities by the time of POST1. This is a large qualitative difference in the learning environment. The time between POST1 and POST2 does not involve a

similarly radical change but instead presents further progression along the same path.

4   Conclusion

The data discussed in this chapter allow two kinds of insights. Firstly, we gain insight into the learning progress of primary school-age deaf children as they move from primarily using sign language into increasingly diverse uses of literacy and multiliteracies. Secondly, we can also draw conclusions for the way in which teachers can usefully organise learning activities and carry out assessments in a useful and learner-centric way.

With respect to the learning process, we can see in both groups that involvement is ahead of achievement and accuracy. This means that the school environment supports children's readiness to get engaged in learning and to tackle new activities, no matter whether they are perceived as easy or difficult. By the time the children have been at the school for nearly three years, the scores for involvement have reached the maximum. This psychological foundation of learning is critical, and is doubtlessly supported by the fully accessible communication in sign language at the school. The variety of tasks involving different types of literacies/ multiliteracies shows that the children are developing multiple skills and are becoming competent users of multimodal and multilingual resources in a positive learning environment with a lot of opportunities for visually enhanced learning.

With respect to progression over time, we see that there is a large step change in learning during the first year of schooling, as evidenced in the data from the 2018 cohort. Children acquire the ability of engaging in various tasks and sustaining their interest and involvement. They also move gradually towards the acquisition of basic literacy. With respect to the data from the 2016 cohort, we have also seen evidence of major steps in learning, with respect to moving from word level to sentence and text level. Along the way towards the acquisition of literacy skills, we see that reading is acquired ahead of writing, which poses particular difficulties for deaf children. This resonates with early reports on learning from the literature on sign bilingual education. For instance, Davies (1991: 185) writes:

> And we started writing very late. We didn't start with writing until second or third grade. Some of the children wanted to, so they could. We didn't stop them, but if they didn't say it themselves, 'I want to write,' then we didn't ask them to. The ones who did, wanted to

write stories, and they tried. And it was very ... the Swedish was very infiltrated with sign language–you could see the sign language word order. But the children knew a lot of grammar already, and they knew a lot about the differences between the languages, so they had a tool to use when they wrote. I think that was the problem before. You often asked them to write before they could read and this is new language for them. How can they write something they don't know? Impossible.

The present research confirms such early impressions but data such as presented here can pinpoint individual steps and elements in the process of acquisition of literacy and multiliteracies skills more precisely. This brings us to the issue of assessment of learning.

As argued in sections 1 and 2, our project's approach to measurement is both more child-friendly and more informative. By using the three separate measures of involvement, achievement and accuracy, we are not limiting assessment to standardised tests, counting the number of right and wrong answers. The differences between achievement and accuracy scores in the 2016 cohort are particularly revealing. During the pre-tests, teachers had to provide much help and support, and this is reflected in the relatively lower achievement scores. However, at the same time, accuracy scores show that the children already had basic language skills in place. At times, the difficulty was more with unfamiliar tasks rather than with knowing how to use elements of language and literacy. Only testing for accuracy would have yielded much lower scores, thereby missing out on capturing some important evidence of existing language skills. It is quite possible that deaf children are often assessed as having lower language skills than they actually have, because they do not have access to support with understanding and completing the task itself via explanations through sign language as the medium of communication.

Finally, one of the most important findings is the viability of assessment without pressure, in the form of activities that feel like just another classroom session. Assessment activities have covered a wide range of styles from creative outputs (e.g. posters) to group discussions and competitive games. Together with the three aspects of assessment, this provides rich information on the children's actual progress with learning about language and literacy.

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Appendix 1: Examples of test tasks

Skill: Reading (Activity R1.3)
Objective: I can read two-word phrases.
Materials: • Black-and-white pictures with a two-word description and two response boxes drawn on the paper. See the example below.
Activity
Step 1 The teacher distributes sheets of paper with 8-10 pictures. Children sit in pairs. The teacher then does 2 examples on the blackboard to show the children what to do (how to put crosses and ticks in the boxes). Step 2 Children work in pairs to complete the task. The word not matching the picture is marked with a cross in the box, the correct word that matches the picture is marked with a tick. Step 3 (optional extension activity) Children who finish early can do the extension activity (or you can do the extension activity with all children if you like and have time). For the extension activity, children write the correct word instead of the wrong word under the picture.
Type of activities (individual or groups): This is for children to work in pairs.
Which English words/language to use in the materials: Objects, colours, numbers, shapes (e.g. five cows, a round house, pink bananas). You can use articles (a, and, the) but the task does not focus on articles.

Example:

Worksheet given to children: Response to fill in:

a red hand   a red hand

☐ ☐   ☒ ☑

(for extension activity, write blue here)

Skill: Reading (Activity R1.4)
Objective: I can understand familiar written words. I can understand a short story in sign language.
Materials: • Sheets of paper for children to draw on   • Small size vocabulary cards
Activity
Step 1   The teacher signs a short story about a school trip, for example a class going to a museum, farm, or sport competition with their teacher and some parents or volunteers. They may be going by bus, train, or bicycle etc.   Step 2   The teacher asks the children to draw a picture of the school trip on an A4 sheet of paper.   Step 3   Children work in groups of 3-4. The teacher selects one of the pictures from each group and gives one pile of vocabulary cards to each group. Children work in groups to place vocabulary cards on the picture. The teacher should explain that not all vocabulary cards may fit this picture and children should try to select those cards that fit and place them.
Type of activities (individual or groups):   Step 1 is in front of the whole class, and in step 2 children work individually. Step 3 is for groups of 3-4 children. The teacher may go from one group to another to give some help.
How to make materials: Make 10-12 word cards with 16 pt font. One set of cards is needed for each group.
Which English words/language to use in the materials: Words for people in the school community: children, teacher, warden, parents, man, woman, boy, girl. Words for places and vehicles in the story, e.g. museum, farm, village, playground, bus, train. Words for activities, for example: go, play, run, see, sit.

Note: Keep all pictures. You will use the pictures for a writing activity later.

Skill: Writing (Activity R1.7)
Objective: I can write a short text.
<mark>**Materials:**</mark> • Children's pictures of a school trip from the R4 activity
Activity
Step 1 Remind the children about the R4 activity, where they were drawing pictures of the school trip. Distribute their pictures from the R4 activity back to the children. Step 2 Write some partial sentences on the blackboard for children to use in their text, and explain in sign language what they mean, for example: I am going to _____ The bus is _____ I feel_____ I play with _____ It is _____ Step 3 Ask the children to write 2-3 sentences under their picture. They can copy and complete the sentences from the blackboard.
<mark>**Type of activities (individual or groups):**</mark> Step 1 is in front of the whole class, and in step 2 children work individually.
<mark>**Which English words/language to use in the materials:**</mark> Words for places and vehicles in the story, e.g. museum, farm, village, playground, bus, train. Words for activities, for example: go, play, run, see, sit. Some prepositions, e.g. go to the museum, sit in the bus. Some adjectives, e.g. big, yellow (bus), happy, scared, etc.

Appendix 2: Test result data

2016 cohort scores (PRE, POST1 and POST2)

Fingerspell familiar words	PRE-TEST R1.2			FIRST POST-TEST R1.2			SECOND POST-TEST R1.2		
	INV	ACH	ACU	INV	ACH	ACU	INV	ACH	ACU
	1	1	2	2	1	2	2	2	2
	2	1	2	2	1	1	2	2	2
	1	0	1	2	1	1	2	2	1
	2	1	2	2	1	2	2	2	2
	1	1	2	2	1	1	2	2	2
	2	1	2	2	1	2	2	2	2
	2	2	2	2	2	2	2	2	2
	2	1	2	2	1	1	2	2	2
	2	1	2	2	1	1	2	2	2
	2	1	1	2	1	1	2	2	2
	2	1	2	2	1	1	2	2	1
	2	0	1	2	1	1	2	1	1
	1.75	0.92	1.75	2	1.08	1.33	2	1.92	1.75

Recognise familiar words	R1.1			R1.3		
	INV	ACH	ACU	INV	ACH	ACU
	2	1	2			
	2	1	2	2	2	2
	2	1	1	2	2	2
	2	1	2	2	2	2
	2	1	2	2	2	2
	2	1	2	2	2	2
	2	2	2	2	2	1
	2	1	2	2	2	2
	2	2	2	2	2	2
	2	1	2	1	0	0
	2	1	2	2	2	2
	2	1	1	2	2	2
	2	1.17	1.83	1.9	1.81	1.72

Understand familiar written words	**R1.3**		
	INV	**ACH**	**ACU**
	1	1	1
	2	1	2
	0	0	1
	2	1	2
	1	1	1
	2	1	2
	2	1	2
	2	1	2
	2	1	2
	1	0	1
	1	0	1
	2	0	1
	1.5	**0.67**	**1.5**

	R1.4		
	INV	**ACH**	**ACU**
	2	1	2
	1	0	1
	2	2	2
	2	2	2
	2	1	2
	2	1	2
	2	1	1
	2	1	2
	2	1	1
	2	1	1
	2	1	1
	1.9	**1.09**	**1.54**

Understand a short and simple written text	**R1.5**		
	INV	**ACH**	**ACU**
	2	1	0
	1	0	0
	2	1	1
	2	1	0
	2	1	1
	2	1	1
	2	1	0
	2	1	0
	1	0	0
	2	1	0
	2	1	0
	1.81	**0.81**	**0.27**

	R1.5		
	INV	**ACH**	**ACU**
	2	2	2
	2	2	1
	2	1	1
	2	2	2
	2	1	1
	2	2	2
	2	2	2
	2	1	0
	2	2	1
	2	1	1
	2	1	1
	2	1	1
	2	**1.5**	**1.25**

Recognise familiar words	W1.1				W1.2		
	INV	ACH	ACU		INV	ACH	ACU
	0	1	1				
	1	0	1		2	2	2
	0	0	0		2	1	1
	1	1	1		2	2	2
	1	0	1		2	1	1
	1	1	1		2	2	2
	1	1	1		2	2	2
	1	1	1		2	1	1
	1	1	1		2	2	2
	2	0	1		2	2	2
	2	0	1		2	1	1
	0	0	1		2	2	2
	0.92	**0.5**	**0.92**		**2**	**1.63**	**1.63**

Write or copy familiar words	W1.4				W1.1		
	INV	ACH	ACU				
	2	1	2		2	1	1
	2	1	2		2	1	1
	1	1	1		2	1	1
	2	1	2		2	1	1
	1	1	1		2	1	1
	2	1	2		2	1	1
	2	1	2		2	2	2
	2	1	2		2	1	1
	2	1	2		2	1	1
	2	1	2		2	1	1
	2	1	2		2	1	1
	1	1	1		2	1	1
	1.75	**1**	**1.75**		**2**	**1.08**	**1.08**

Write a short sentence	W1.5			W1.5			W1.3		
	INV	ACH	ACU	INV	ACH	ACU	INV	ACH	ACU
	1	1	1				2	1	1
	1	1	1	2	0	0	2	2	1
	1	1	1	2	0	0	2	1	1
	1	1	1	2	0	0	2	1	1
	1	1	1	2	0	0	2	1	0
	2	1	2	2	0	0	2	1	1
	2	1	2	2	0	0	2	1	0
	1	1	1	2	0	0	2	1	1
	1	1	2	2	0	0	2	2	1
	1	1	1	2	0	0	2	1	1
	1	1	1	2	0	0	2	1	1
	1	1	1	2	0	0	2	1	0
	1.17	1	1.25	2	0	0	2	1.67	0.75

2018 cohort scores (pre-test and first post-test)

SKILL	PRE-TEST			FIRST POST-TEST			SECOND POST-TEST		
	R1.2			**R1.2**					
Fingerspell familiar words	**INV**	**ACH**	**ACU**	**INV**	**ACH**	**ACU**			
	0	0	0	2	1	1			
	2	0	0	2	1	1			
	0	0	0	2	1	1			
	2	1	2	2	1	1			
	1	0	0	2	1	1			
	1	0	0	1	1	1			
	0	0	0	1	0	0			
	0	0	0	1	0	0			
	0.75	**0.12**	**0.25**	**1.62**	**0.75**	**0.75**			

	R1.1			**R1.3**			**R1.3**		
Recognise familiar words	**INV**	**ACH**	**ACU**	**INV**	**ACH**	**ACU**	**INV**	**ACH**	**ACU**
	0	0	0	2	1	1	2	2	2
	2	0	0	2	1	1	2	2	2
	1	0	0	2	1	1	2	2	1
	2	1	2	2	1	1	1	1	0
	1	0	0	1	1	1	1	1	0
	1	0	1	2	2	2	2	1	1
	0	0	0	1	1	1	1	1	0
	1	0	0	2	1	1	1	0	0
							2	2	2
							2	1	0
							2	1	0
	1	**0.12**	**0.37**	**1.75**	**1.12**	**1.12**	**1.63**	**1.27**	**0.72**

Understand familiar written words	R1.3			R1.4		
	INV	ACH	ACU	INV	ACH	ACU
	0	0	0	0	0	0
	1	0	0	2	0	0
	0	0	0	0	0	0
	1	1	2	2	1	1
	0	0	0	1	0	0
	0	0	0	1	1	1
	1	0	0	1	0	0
	0	0	0	0	0	0
	0.37	0.12	0.25	0.87	0.25	0.25

Recognise capital & small letters	R1.4			R1.1			R1.1		
	INV	ACH	ACU	INV	ACH	ACU	INV	ACH	ACU
	0	0	0	2	2	2	2	2	2
	1	0	0	2	1	1	2	2	2
	1	0	0	1	1	1	2	1	1
	2	2	2	2	1	1	1	1	1
	1	0	0	1	1	1	2	2	1
	1	0	0	1	1	1	2	2	2
	0	0	0	0	0	0	1	1	1
	1	0	0	0	1	1	1	1	1
							2	2	2
							1	1	1
							1	1	1
	0.87	0.25	0.25	1.12	1	1	1.54	1.45	1.36

SKILL	PRE-TEST			FIRST POST-TEST			SECOND POST-TEST
	W1.1			W1.2			
Recognise familiar words	INV	ACH	ACU	INV	ACH	ACU	
	0	0	0	2	2	2	
	1	0	0	2	2	2	
	0	0	0	2	2	2	
	2	0	1	2	2	2	
	0	0	0	0	0	0	
	0	0	0	2	1	1	
	1	0	0	1	0	0	
	0	0	0	1	0	1	
	0.5	0	0.12	1.5	1.12	1.25	

	W1.3			W1.1		
Write or copy simple symbols	INV	ACH	ACU	INV	ACH	ACU
	0	0	0	2	2	2
	2	0	1	2	2	2
	1	0	0	2	2	1
	1	0	1	2	1	1
	1	0	0	2	2	2
	1	0	0	2	2	2
	0	0	0	2	1	1
	0	0	0	2	2	1
				2	2	2
				2	2	2
				2	1	1
	0.75	0	0.25	2	1.72	1.54

Write or copy familiar words	W1.4			W1.1			W1.2		
	INV	ACH	ACU	INV	ACH	ACU	INV	ACH	ACU
	0	0	0	2	1	1	2	2	1
	1	0	0	2	1	1	2	1	1
	0	0	0	1	1	1	2	1	1
	2	1	2	2	1	1	1	1	0
	0	0	0	1	1	1	1	1	1
	0	0	1	1	1	1	2	1	1
	0	0	0	1	0	0	1	1	0
	0	0	0	1	0	0	1	0	0
							2	1	1
							2	1	1
							1	1	0
	0.37	0.12	0.37	1.37	0.75	0.75	1.54	1	0.63

Write one or two simple words	W1.5			W1.5		
	INV	ACH	ACU	INV	ACH	ACU
	0	0	0	1	0	0
	1	0	0	1	0	0
	0	0	0	1	0	0
	1	1	1	1	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0.25	0.12	0.12	0.5	0	0

Deaf peer tutors' decision-making when teaching multiliteracies to deaf learners in India, Uganda and Ghana

Jenny Webster and Eilidh Rose McEwan

1   Introduction

The purpose of this chapter is to investigate decisions made by deaf peer tutors in the context of teaching multiliteracies skills to deaf learners in India, Uganda and Ghana. Specifically, the chapter provides an analysis of a set of 'micro-case studies' wherein the peer tutors described what happened in each classroom session, including their observations of learners and their own decision-making processes.

These classes took place as part of a three-year project called 'Peer to Peer Deaf Multiliteracies: Research into a sustainable approach to the education of deaf children and young adults in the Global South' (2017-2020). This international project was led by the Institute for Sign Languages and Deaf Studies (iSLanDS) at the University of Central Lancashire, in partnership with Lancaster University. It was funded by the Economic and Social Research Council (ESRC) and the Department for International Development (DFID) through their joint scheme 'Raising Learning Outcomes in Education Systems'.

The aim of this work is to promote reading, writing, sign language, technology and multimodal communication in order to improve the education of deaf people in developing countries and address the longstanding problem of deaf people's insufficient access to employment, income, life quality and fulfilment. 'Learning the written (and spoken) languages of their environment is a crucial issue for deaf or hard-of-hearing people aiming to enhance their inclusion', because for many, the majority written language of their country is a second language, and traditional teaching methods do not compensate for this (Hilzensauer & Dotter 2012: 69). This project followed a one-year pilot (2015-2016) in which the partners harnessed 'real literacies' (Street 2012) to develop innovative ways to teach literacy to adults. These included using learner-directed methods that involved peer-to-peer teaching by local deaf tutors and a bespoke online platform called Sign Language to English for the Deaf (SLEND). The subsequent three-year project went beyond the pilot's focus on literacy by encompassing multiliteracies skills and work with

deaf children, for whom many other modes of expression (e.g. signing, drawing, scribbling, and fingerspelling) are just as important as reading and writing English. Both projects used terminology from Literacy Studies to distinguish between communication modes, e.g. signing, and literacies, e.g. reading and writing (Gillen, Ahereza & Nyarko 2020: 185).

Section 2 provides a literature review that examines some of the research on 'real-life English' methods (2.1), challenges in teaching deaf multiliteracies (2.2), and the socio-cultural aspects of deaf multiliteracies (2.3). Next, the method used by the authors to analyse the micro-case studies is described in section 3. The analysis presented in section 4 looks into how the topics were selected by the peer tutors (4.1), how the peer tutors embedded the topics to teach multiliteracies (4.2), and what the peer tutors observed about learners' engagement with the topics (4.3). A conclusion with recommendations for further study is provided in section 5. The scope of this chapter does not allow for descriptions of the learners' backgrounds, classroom environment and learning materials, but the reader may find such details elsewhere in this e-book, especially in the chapter by Pal, Webster and Zeshan in this volume and the contributions by Manavalamamuni and Ahereza in Volume 2.

2   Literature review

To consider the literature supporting the bespoke multiliteracies approach in this project, we firstly explore the notion of 'real-life English' which involves the use of authentic materials and meaningful contexts (2.1). Next, some of the challenges of using the multiliteracies approach are discussed (2.2), including motivating learners, addressing their anxiety, ensuring their involvement in decision-making, and combining reading and writing with sign language, fingerspelling and drawing. Finally, we present some literature on socio-cultural aspects of deaf multiliteracies (2.3), such as agency, collaboration, and the application of deaf signers' expertise and role modelling in educational contexts.

2.1 Real-life English methods

This section looks into the literature on two aspects of the 'real-life English' (RLE) teaching methods that were used in the project: authentic materials and meaningful contexts. Authentic materials are those used in 'real-life transactions', that 'are not doctored or simplified' (Ahmed 2017: 182). They contrast with texts that are simplified, manipulated or staged (ibid). While simplified texts fit the belief that language skills should be acquired through 'planned assimilation', authentic materials correspond

to the idea that language skills are developed 'through the learner's effort to use whatever communicative resources are available to the learner to make meaning' (ibid: 182). Examples of authentic materials are photos, posters, newspaper articles, calendars, restaurant menus, flight tickets, and shop receipts (Ahmed 2017: 191).

The principles behind the use of authentic materials include that they have a 'real-world relevance' which 'enables learners to create a link between what they learn at school and how knowledge is used in practice' (Ozverir et al. 2016: 488). Learners tend to be engaged and motivated when they are acquiring knowledge that they can apply for authentic purposes, e.g. knowledge about societal problems or ways to change their behaviour (ibid). Authentic materials also require more flexible, creative and complex thought, and more interaction among learners, because these materials are typically 'ill-defined' and not presented in a staged or sequential way (ibid). Activities based on authentic materials also permit an examination of multiple perspectives, including the author, content, audience, process and form of the materials (ibid). Other benefits of authentic materials are that they help learners to gain knowledge about the cultural aspects of language and they meet learners' real needs more effectively (Ahmed 2017: 185). Gabriel and Dostal (2013) explain that authentic materials are important in assessments as well as in classroom learning, because '[if] assessment is to be instructive, it must reflect a variety of literacies and involve the open-ended interpretation and creation of real texts for real purposes' (p. 60), so that the assessment process 'contributes to students' overall motivation, engagement, and understanding of language, rather than confusing or frustrating their efforts by presenting nonsensical or decontextualized input' (p. 56).

But some scholars assert that authentic materials are too difficult for learners, and that specially-created resources to simplify learning are more appropriate (Ahmed 2017). Sometimes authentic materials are not grammatically accurate and do not correspond to the syllabus (Mishan 2005). They might also be biased toward a particular culture or community, and contain complicated, mixed structures that are not possible for beginner learners to decode (Nixon 1995). It is also tricky for the teacher to determine whether a material is actually authentic or not (Harmer 2007), and to adapt materials appropriately for the learners if they are too advanced (Ahmed 2017). For learners to make effective use of authentic materials, they need to have time to discuss them with their peers and teachers (Hulan 2010: 61).

Aside from authentic materials, another aspect of the 'real-life English' method is having a meaningful context for the language learning.

Deaf students tend to find it easier to understand sentences when they are in meaningful contexts instead of being shown in isolation (Nolen & Wilbur 1985). Because many deaf learners have fewer 'contextual and interactional experiences' compared to hearing learners, the content presented in class has a larger effect on them and it is important for this content to be as meaningful as possible (Wilbur 2000: 86). Examples of providing meaningful contexts may be taking advantage of learning in a variety of settings such as at the zoo (Wilbur 2000). Instead of just learning words for animals, learners can use the meaningful context of the zoo to discuss in sign language which animals are the most interesting, make up stories about them, and translate their stories from sign language into written English.

Motivation increases when the learning is made relevant, engaging and meaningful to the students within a particular group or class (Dörnyei 2001; Cambridge University Press 2018). This requires the teacher to be alert to learners' lives and experiences, and provide them with choices (Cambridge University Press 2018). The content should be connected to a genuine outcome that students are enthusiastic about, and that is suitably challenging, such as putting on a dramatic performance (ibid).

2.2 Challenges in deaf multiliteracies

Teaching multiliteracies to deaf learners involves several challenges, some of which are explored in this section. These include increasing motivation, addressing anxiety, and ensuring flexibility and student involvement in decision-making, as well as combining multiliteracies skills (e.g. signing, reading, writing, fingerspelling, and drawing) in an effective way.

As this approach and area of research are relatively new, not all of the literature discussed here is based on work with deaf learners. For example, studies of learner anxiety and motivation have rarely focussed on classes of deaf signers led by deaf tutors. Nonetheless, it has been recognised that language anxiety and communication worries can create discomfort for students, sometimes leading to students abandoning a course due to feeling unable to function in class (Adams & Nicolson 2014). Students who have disabilities or special educational needs may be especially at risk of this kind of anxiety. Gabriel and Dostal (2013) note that there has been very little research into the ethical aspects of assessing this group of learners. Such research is urgently needed because these learners tend to be subject to more surveillance than their peers, which is meant to facilitate their progress but can actually harm their motivation and development instead.

Ideally, language teachers need to be able to recognise and mitigate anxiety so that it does not damage students' motivation. Addressing students' emotional needs requires teachers to use a learner-centred method, including 'maximum talk-time, cultural authenticity and real-life modelling' which should be used flexibly and should involve consultation with and decision-making by the learners (Adams & Nicolson 2014: 37). Motivation, as a key factor in language learning, is also sustained by the use of authentic materials and activities (Ozverir et al. 2016). This is because a common cause of demotivation is the school system's failure to make meaningful connections between the subject area that a learner is interested in, and their language learning. For example, these are frequently taught as two separate subjects. The chance to develop subject-specific knowledge has been shown to boost students' language-learning motivation (Ozverir et al. 2016).

Another challenge faced by teachers is the question of how to successfully combine the use of reading, writing, signing, fingerspelling, and drawing. In the deaf multiliteracies approach, signing provides a foundation for other literacy skills (cf. Wilbur 2000). For example, learning to fingerspell as part of acquiring a first sign language gives children the chance to connect fingerspelled letters to written letters (ibid). Fingerspelling is also a common strategy exploited by more advanced learners to identify an unknown word. They tend to fingerspell the word and produce an equivalent sign, and then re-read the sentence or paragraph and consider the semantic context to make an educated guess about the word's meaning (Andrew 2012).

Being able to sign also means that the teacher can read books in sign language to the children and display the pictures and English words and sentences at the same time (e.g. Baker 2010; Swanwick & Watson 2005; Golos et al. 2018). Teachers can use a 'guided reading approach' and ask learners to 'storysign', i.e. put signs into English word order (Shirmer & Schaffer 2010: 57). Then the teacher can lead a discussion and ask the learners to re-tell or act out the story, or draw pictures to make a storyboard (ibid). The 'guided reading approach' was created by Fountas and Pinnell (1996) and is specifically identified as a beneficial method for deaf students (Gallaudet University 2009).

Andrews (2012: 308-9) recommends that teachers add drawing and writing to their storysigning sessions 'to show deaf children the reciprocal relationship between reading and writing'. Adding drawing to the classroom activities can build multiliteracies skills and help the learners demonstrate their understanding of a story even before they are able to read English words (Andrews 2012). For the youngest learners who

do not have any writing skills yet, scribbling and drawing engages their imagination and encourages the development of their incipient written literacy and creativity (Teale & Sulzby 1986; Andrews 2012).

However, the 'storysign' technique is not unproblematic when it comes to teaching written literacy, as it does not necessarily facilitate an accurate model of English phonology, semantics, morphology, syntax and pragmatics (Andrews 2012). This means that the tutor needs to do supplementary work to increase the deaf learners' access to these aspects of literacy in a sequential, linear language such as English (ibid). Whilst providing learners with a robust model of sign language, including movement, space, facial expressions, raised eyebrows, head tilts, shoulder shifts, and mouth movements (e.g. Valli & Lucas 2000), teachers should be careful to metalinguistically acknowledge the fundamental differences between signing and writing, and build bridges to connect languages and forms of literacy to each other (Andrews 2012). Teachers and researchers need to generate reliable methods for testing these kinds of bilingual strategies empirically, and should not presume that telling stories in sign language is in itself a successful way of teaching children to read English texts (ibid). However, it is likely that 'storysigning can lay the conceptual groundwork and allow for rich classroom discussions about how English texts work if the appropriate follow-up English reading instruction is carried out' (Andrews 2012: 319).

2.3 Socio-cultural aspects of deaf multiliteracies

This section looks briefly at some of the literature on socio-cultural aspects of deaf multiliteracies, including agency and collaboration in the classroom, and the expertise and role modelling provided by deaf teachers.

The deaf multiliteracies approach is largely based on the socio-cultural perspective of learning (Vygotsky 1978), which focuses on helping learners connect new content to what they already know. This approach encompasses a need for the students to contextualise their language learning, which was challenging in the setting of this project because many of the students had such limited experiences with literacy and with formal education in general. This process of relating to learners' existing knowledge and interests requires three 'prerequisites' (Cambridge University Press 2018: 11). The first one is a supportive classroom dynamic wherein each individual learner is made to feel comfortable and valued (Dörnyei & Murphey 2003). This often requires the teacher to tell personal stories of her own, to encourage the learners to talk openly about their own interests and experiences (Cambridge University Press 2018).

The second prerequisite is changing the teacher's orientation from a lecture-style teaching to more open, collaborative learning, which may involve engaging more with students and being ready for difficulty or failure on some new tasks, without feeling disappointed. Considering the teacher as the 'expert' and therefore the 'power-holder' may create a reticence to try new methods and might obscure the situated, contextual and social aspects of learning (Adams & Nicolson 2014: 36). For effective learning of multiliteracies, the approach should be learner-centred and dialogic, involving a 'dynamic interplay between the different modes of learning in a collaborative context where students are working toward a common goal' (Hepple et al. 2014: 227). This emphasis on collaboration with and between learners led to an important outcome in the deaf literacy pilot project, namely that participants were able to 'reflexively enhance their own understandings of the complexities and richness of their existing practices, including through discussions with others' while the deaf teachers increased their awareness of language ideologies (Gillen et al. 2020: 188).

The last prerequisite is that students have enough existing knowledge to engage in the learning, and the ability to access the resources necessary to complete tasks (Cambridge University Press 2018). For deaf learners, an environment that meets these prerequisites needs to involve leadership from a bilingual or multilingual deaf teacher who can act as a linguistic and cultural role model, and support emotional well-being and identity development, especially for younger learners (e.g. Gárate 2012; Golos et al. 2018). Deaf role models may also assuage the concerns of learners' family members who may never have met a successful deaf adult, providing 'hope where there is sometimes confusion or worry' (Beckley 2016: 47). They can sometimes become mentors to the family, which makes them even more central to deaf pupils' emerging skills and understanding of the world (Golos et al. 2018). Moreover, deaf teachers open up the possibility of using 'deaf epistemology', or deaf ways of knowing, in multiliteracies learning (Andrews 2012: 318).

The role of deaf teachers is also a crucial factor in motivation. An important notion in second-language learning is that of the 'ideal L2 self', which is the learner's 'imagined version of themselves that they would ideally like to become in the future' (Cambridge University Press 2018: 3; Derman-Sparks & Edwards 2010). Deaf teachers who successfully use multiple signed and written languages can provide deaf learners with a compelling vision of their own future 'L2 self', making realistic the prospect of becoming, for example, a professional who works with a team

of practitioners and researchers from several different countries and has experience of international travel.

Without such linguistic and cultural modelling from deaf teachers, i.e. if a deaf child only has access to hearing, non-signing teachers, there is a risk that the child will build up a negative picture of their deafness (Golos et al. 2018). In other words, the child will be unlikely to develop self-acceptance and a healthy deaf identity. A hearing teacher has, by definition, never had experience as a deaf learner. This limits what the teacher can draw on to help the child build the resilience, creativity and problem-solving skills that are necessary for a deaf person to be successful in language learning and beyond (Adams & Nicolson 2014). In contrast, deaf teachers are able to harness their personal experiences as deaf students to adjust their expectations and approaches (ibid). Being able to interact with learners in their own first language and cultural context is also advantageous when designing, modifying, and administering assessments (Gabriel & Dostal 2013).

For deaf people, the social cultural environment in which they enact 'beings and doings' every day can be an extremely challenging one in which to act freely because of such linguistic barriers and cultural attitudes of the mainstream towards poor English language skills (Sen 1999). A range of elements across disparate contexts such as a teachers' knowledge of a local sign language, the availability of sign language tutoring for families, the availability of deaf education, financial means or geographical location of specific training courses held by foundations can all impact on a deaf individuals' ability to access and develop their language skills. Such factors which can enable or constrain an individual's ability to develop their skills and capabilities in key areas, language in this case, are known as 'conversion factors' (Sen 1999; Nussbaum 2007: 23–24). Capability inputs related to language or to tutoring English clearly demonstrate a range of conversion factors which either enabled or hindered peer tutors within the project in their achievement of key capabilities (achieving a capability is termed 'functioning' in the literature) (Nussbaum 2007).

Deaf teachers may be able to use their cultural and intellectual experiences to help learners build general communicative competence and agency. A Ugandan participant in the pilot project observed that 'when it comes to communicating with hearing people such as police, [some deaf people] will not try but rather call someone else to help them, arguing that they don't want people to notice their 'broken' English, [which] deprives them of the opportunity to practice and develop their English' (Gillen et al. 2020: 192). It can be observed that a lack of training amongst the police in sign language and low funding provision for

interpreters are conversion factors which have constrained participants' choice to seek assistance from the police. These incidences lend credence to the argument that structural inequalities resulting from language can have a direct impact on deaf individuals' confidence and self-esteem, thereby negatively impacting their psychological capabilities (Samman & Santos 2009).

Throughout the project, peer tutors discussed the utilisation of a range of core skills related to teaching learners. For instance, one peer tutor in India discussed 'taking responsibility' for his class, ensuring that the learners watched 'various topics for the week' on SLEND, and 'collected portfolios' ('Train ticket', June 2018, Manavalamamuni). Another peer tutor discussed making materials for classes, and lesson selection, and noted 'I choose the topic myself,' as well as stating every 'session and discussion [was] for 2 hours' ('Zoo', July 2018, Vishwakarma). The tutor stated that 'sub-topics are good for them to stand and explain and they have to know the meaning of "negative sentence structure"' (ibid). In these instances, participants have demonstrated the development of skills related to teaching, including the supervision of learners, content consideration and selection of topics for teaching, checking for learners' understanding of content and finally reflection on what works best for learners to engage with the lesson. These skills demonstrate tutors' capabilities realisation in terms of using senses, imagination and thought to prepare lessons, engage with learners and transfer literacy knowledge, as well as affiliation, whereby engaging with learners through communication in both Indian Sign Language and English has facilitated greater social integration in the learning context, on the part of the tutor as well as the learner. A linguistically accessible learning environment arguably facilitates the 'social bases of self-respect and non-humiliation' for deaf individuals, as well as prompting participation in a range of social interactions. Other realised capabilities include emotion, where positive forms of association integral to deaf learners' and deaf tutors' development are arguably being supported, and control over one's environment, more specifically, the clause that discusses 'relationships of mutual recognition with other workers' (Nussbaum 2007: 23–24). Assessing peer tutors' realisation of a range of capabilities indicates where 'development' might be occurring in the daily settings and performance of tasks and skills while teaching.

3   Data and method

A set of micro-case studies was generated by the nine peer tutors (five in India and two each in Uganda and Ghana), by filling in a template following

each class session. The UK research team provided this template, which included four main sections: A) The learner group, with a list of the students' names and ages; B) The documentation, with a list of the text files, images and videos relevant to the session; C) The topic, with a description of why the particular topic was chosen, and the sequence for teaching it; and D) The observation, with details on what the learners did and their engagement with the lesson. The peer tutors were encouraged to seek language support by email from UK-based team members to ensure that their English text was clear and contained sufficient detail for the purposes of the project. This was also in accordance with the capacity-building aspect of the project (see Webster 2014), through which deaf peer tutors are supported to attain practitioner and research experience, and eventually achieve formal qualifications to enable them to become accredited teachers. Drafting and revising their micro-case studies was thus beneficial not only in terms of facilitating a rich data set for analysis, but also helped to consolidate the peer tutors' academic skills and critical reflection on their teaching practice.

Most of the 46 micro-case studies were about 3 pages long. Some tutors included more detail than others. The per-country breakdown is provided in Table 1. Because there were more peer tutors in India than in Uganda and Ghana, there are twice as many case studies from India. In most cases, peer tutors working in schools with deaf children taught daily sessions Mondays to Fridays. Classes with adults were more variable as to the timing of the sessions, but took place several times a week with all groups. The micro-case studies rely on and synthesise information from peer tutor reports, which documented the classroom activities on a monthly basis, as well as other sources of information such as learners' portfolios, video recordings, and other project outputs. The peer tutors and research assistants were asked to select examples of learning that seemed most interesting to them, and to create micro-case studies about these themes (see Appendix).

Table 1: Number of micro-case studies in the data set

	Adults' sessions	Children's sessions	Total
India	14	9	23
Uganda	3	8	11
Ghana	6	6	12
Total	23	23	46

The authors read through the micro-case studies with particular attention to the peer tutors' insights into their decision-making. The project's

highly innovative approach to learning placed significant demands on the peer tutors with respect to selecting the RLE topics and devising ways to embed the teaching of multiliteracies into these topics. The authors used grounded theory and the constant comparative method (Glaser & Strauss 1967; Patton 2002) to develop codes for the data while reading through the micro-case studies. This was necessary due to the unprecedented nature of the deaf tutors' RLE protocol, which meant that there was no existing research base to draw on. The codes that were generated were as follows:

1. The students were interested in learning about the topic
2. The topic was a need that the students had perceived
3. The tutor and students decided the topic together
4. The tutor decided the topic on his/her own
5. The topic was dictated by the project, e.g. pre-tests
6. The topic was based on a need that the tutor had perceived in previous sessions
7. The topic was based on a need that the tutor had perceived from the tutor's own personal experience
8. The topic was based on a need that the tutor had identified using literature/research
9. The tutor chose the topic because it was a logical progression from the previous topic
10. Reason is unclear

Each micro-case study was coded with one or more of these numbers. The codes were not mutually exclusive, so more than one code was used for some of the texts, e.g. where a tutor mentions deciding the topic by himself (code 4) as well as basing this decision on a learning need that he had perceived in a previous session (code 6).

4   Analysis and discussion

This section presents a qualitative analysis and discussion of how the real-life English topics were decided by the peer tutors and students (4.1), how these topics were exploited to teach multiliteracies (4.2) and observations about learners' engagement with the topics (4.3).

4.1 How the real-life English topics were decided by the peer tutors and students

Following an overview of the variety of bases on which topics were selected for the classes of children and adults, the most common bases

are explored, namely students expressing an interest in the topic (4.1.1); and the tutor perceiving a need to teach the topic and/or selecting the topic independently (4.1.2).

The authors examined the peer tutors' descriptions of how they determined what topic to teach, and coded each mention of a reason or motivation for choosing a topic. Table 2 provides a breakdown of the coded data from 42 micro-case studies. The decisions made by students are highlighted in blue (29 occurrences in total) and those made by tutors are highlighted in green (44 occurrences in total).

Table 2: How topics were chosen for sessions, according to data from 42 micro-case studies

Rationales mentioned in micro-case studies	Number of occurrences		
	Children	Adults	Total
Students were interested in learning about the topic	4	11	15
The topic was a need that the students had perceived	0	7	7
The tutor and students decided the topic together	4	3	7
The tutor decided the topic on his/her own	16	8	24
The topic was dictated by the project, e.g. pre-tests	1	0	1
The topic was based on a need that the tutor had perceived in previous sessions	9	2	11
The topic was based on a need that the tutor had perceived from the tutor's own personal experience	1	4	5
The topic was based on a need that the tutor had identified using literature/research	2	2	4
The topic was a logical progression from the previous topic	3	2	5
Reason is unclear	2	0	2
Total	42	39	81

Some of the micro-case studies include more than one reason, so there are 81 occurrences in the table even though only 42 micro-case studies were analysed. The differences between the results for children and adults, specifically the greater tendency for the tutor to decide the topic in the

children's classes, are not surprising because when working with young primary school children, the teacher will naturally be more directive. However, when looking at the totals, it is apparent that the tutor also selected the topic in a large number of the adult classes.

4.1.1 Students expressing an interest in the topic

One of the most common reasons given in the micro-case studies for choosing a topic was that the students expressed an interest in it. Sometimes this stemmed from the students being aware of a certain use of English because of previous exposure to it, and wanting to know more about it. For example, on the topic of bank account application forms, peer tutor Manavalamamuni notes that the students 'wanted to know how to fill them in because they did not know how to apply to a new bank themselves. But they visited banks with their parents before' ('Bank application', August 2018, Manavalamamuni). It seems that their interest was based on having experienced the existence of and rationale behind these forms but not knowing how to use the forms themselves. Similarly, students chose the 'weight' topic based on having visited the market with their parents and seen food items being weighed:

> They wanted to learn the RLE topic of weight and volume. The students watched the SLEND and there was also some explanation about the weight topic that was made at Happy Hands Deaf School. [...] This topic was then chosen by all of us as a group. This topic was good for them to use to buy vegetables and other things at the market, for example 1 kg, 5 kg and 500 grams etc. [...] They had been visiting the vegetable market with their parents but they did not know much about weight or volume units or types of pricing.
>
> ('Weight', October 2019, Manavalamamuni)

In other cases, students' decisions were based on what they had learned in a previous session. For example, peer tutor Manavalamamuni's students 'wanted to know about bank deposit slips' ('Bank deposit slip', Sept 2018, Manavalamamuni), because this was related to the earlier topic of bank applications, and they chose the 'train tickets' topic because they had learned about railway reservation forms in a previous session ('Train ticket', July 2018, Manavalamamuni). Their choices were also motivated by things that they had seen on television, for example the opportunity to order items from online stores ('Ordering online', November 2018,

Manavalamamuni), and the concept of Christmas as depicted on commercials:

> The topic was suggested by children when they started talking about seeing an old man in a red suit and white beard during the Christmas holidays on television and on cards. I told the children that he is Santa Claus, the father of Christmas. The children then shared their experiences during the Christmas holidays. This activity aimed at helping them to improve their narrative and critical thinking skills. I then shared a story about Christmas, and they asked lots of questions. Then the children drew and coloured pictures of Santa Claus.
>
> ('Christmas holiday', January 2019, Addo)

Another reason given for students' choices was that a topic was related to the school curriculum. The 'menstrual cycle' topic taught by Esther in Ghana was chosen because 'a student suggested they wanted to know more about personal hygiene and reproductive rights', as this was part of the 'adolescent reproductive health' subject in the high school curriculum. Some topics were simply based on an activity that students enjoyed, such as colouring:

> The topic was chosen by the peer tutor, after the learners said that they liked colouring. The colour theme was explored using sheets with empty squares and colour words on it. The children identified each colour word and filled in each box with the relevant colour. They were also provided with blank paper so they could colour one side and write the name of that colour in English on the other side. Some children showed initiative and artistic creativity by drawing and colouring in stars and triangles.
>
> ('Colour', July 2018, Nankinga)

Overall, it seems clear that the peer tutors were able to use the learners' ideas for RLE topics in many sessions. However, on several occasions the peer tutors noted that the students were unwilling or unable to select a topic; e.g. they 'did not know how to choose a RLE topic' ('Application forms', July-August 2019, Barot). This is often provided as a reason for the tutors deciding on a topic themselves.

4.1.2 The tutor perceiving a need for the topic and/or choosing a topic independently

In a large number of the micro-case studies, the peer tutors described choosing the topic themselves, often because of a need that they had perceived based on something they observed in the classroom, or an experience they had outside the classroom. Examples of the latter include seeing an 'environmental bio-toilet' whilst going home on the train ('Green bio-toilet', October 2018, Vishwakarma), filling in railway reservation forms ('Railway reservation', June 2018, Muni and Chaneu), and a shop asking them for their customer feedback ('Your shopping experience online', September 2018, Vishwakarma).

There are many instances in the micro-case studies when tutors' topic selection was based on their own observations in class of what their learners did not know or what they enjoyed doing. For example, peer tutor Kumar decided on 'food' as a topic, because 'the students knew signs for many types of food but did not know the English words' ('Working with food literacy', August 2018, Kumar), and Vishwakarma chose maps after noticing that 'the children did not know how to read place names on a map' ('Working with maps', Feb 2019, Vishwakarma). Peer tutor Nankinga observed that several children had missed classes due to toothaches and fevers, but they:

> were unaware of what these words meant and what could be the causes of these conditions. To start the lesson, we focussed on identifying, signing and noting on the blackboard the various sicknesses that are common. Then I downloaded information on these diseases to show the children what causes them and how to prevent further occurrences.
>
> ('Sicknesses', March 2019, Nankinga)

In the children's classes, the tutors frequently based their decisions on what learners appeared to enjoy doing. For example, Nankinga chose to focus on verbs because of 'the children's playful nature', as well as their lack of knowledge about how to describe actions in English such as *sweeping* ('Identifying verbs', November 2018, Nankinga). Similarly, Pal noted that the children liked colouring, 'but didn't know the signs or words for different colours', which prompted him to teach colour terms ('Working with colours', Nov 2018, Pal).

4.2 How the peer tutors embedded the topics to teach multiliteracies

To teach multiliteracies skills through the topics that they and their learners selected, the peer tutors used a variety of activities and methods, including text-based materials, objects, fingerspelling, role play, videos, drawing, discussing vocabulary, and signing stories.

Text-based materials such as posters, application forms, and rail tickets were often used in the lessons to exemplify the RLE topic. For example, in the adult learners' class in Ghana, the peer tutor used a 'do and don't' poster to introduce the concept of negation and show how negative sentence structures are formed. Objects such as animal figurines were also frequently exploited. For the 'telephone' topic in Uganda, the adult learners went outside to look at telephone masts.

In some classes, the practical activities included fingerspelling, e.g. of the words for different colours ('Working with colours', Nov 2018, Pal). Role play was another way of embedding the learning that the peer tutors found to be effective. For instance, peer tutor Nankinga notes that her learners combined role play with writing, signing, and a pictorial exercise in order to consolidate their knowledge of action verbs:

> [the] multiliteracies skills included role plays wherein the children practised signing. I gave *sweep* as an example of an action verb and asked the class to think of action verbs on their own and perform the corresponding action for the class. Questions followed after every action so the learners could sign what it was. Vocabulary words were written on the blackboard. Then the learners were given exercises with pictures of actions and they had to fill in the missing spaces to spell out the corresponding verb in English.
>
> ('Identifying verbs', November 2018, Nankinga)

The peer tutors also used videos on some occasions. An animated video and a RLE video from the SLEND were both used by Esther to teach the 'menstrual cycle' topic in Ghana. For the 'family' topic, she exploited a combination of a video presentation made by a student, a class discussion about the video and related vocabulary words, and a role play.

Activities involving learners creating and labelling drawings were also harnessed by the peer tutors in order to embed the RLE topics and teach multiliteracies. In Uganda, peer tutor Nangkinga's learners drew and labelled objects like 'rope' and actions like 'swimming', and then created sentences using these concepts such as *the children are skipping*

rope and *the children are swimming* ('Naming RLE drawings', August 2018, Nankinga).

The peer tutors also led discussions of vocabulary in several of their sessions. For example, in the session on ordering items from online stores, peer tutor Manavalamamuni led a discussion on the words *Amazon, discount, debit and credit card, delivery* and *order* ('Ordering online', November 2018, Manavalamamuni). He sourced example sentences from the internet and displayed the words on slides and the whiteboard, and asked the students to write sentences using *deliver, within* or *order*. Shirmer and Schaffer (2010: 54) note that discussing vocabulary words enables the teacher to 'provide explicit instruction on word recognition, complex syntax, figurative language, new vocabulary, and text structure as needed before, during, and after reading'. Discussions led by the teacher can also build students' confidence and general skills in conversing about a new concept, responding to others and sharing their ideas (Hulan 2010).

Telling stories through sign language appears many times in the micro-case studies as a way of embedding a RLE topic, and is supported in the literature as an effective way of engaging deaf learners and improving their metalinguistic awareness (e.g. Andrews 2012; Crume 2013; Golos et al. 2018). For Esther's 'storybook' topic, lessons were embedded by taking aspects of speech from the stories and translating them into Ghanaian Sign Language (GSL). At first, the learners were asked to sign the stories with English syntax, and then they had to change this into GSL syntax. Next, Esther asked them to get into groups and create their own stories to write in English and then tell in GSL. In previous work by Andrews (2012), the teacher placed pictures of her deaf students' favourite signs on cards with equivalent English words and example sentences. Each deaf student stood by the card showing his or her favourite sign and told a story in sign language derived from that sign.

Story-signing can be done before, during or after reading an English text as a way of supporting the learner's knowledge of the vocabulary and content so that they can interact with the text and think critically and creatively about it (Shirmer & Schaffer 2010). When learners repeatedly practise this strategy in lessons, it becomes a skill that they can apply independently with texts they encounter outside the classroom (ibid.). Moreover, Andrews (2012) observes that storysigning encourages children to find pleasure in sharing stories and gives them signing experiences that they may not receive at home. In addition to increasing their knowledge of vocabulary, syntax, signing styles, and story genres, this activity helps children develop their storytelling skills and their wider understanding of the purposes of narratives, e.g. to convey a complex or abstract idea

in a concrete, relatable way (ibid.). It also shows them how to use their sign language as a bridge to other languages such as English (Nover & Andrews 1998; Andrews 2012).

For the purposes of the analysis, the different ways of embedding the learning (e.g. through drawing, role play, and story-signing) have been considered separately, but in most of the sessions, the peer tutors used multiple methods. This is exemplified by peer tutor Pal, whose lesson on animals exploited pictures, photos, videos, role play, games, objects (figurines), live animals (fish), craft-making, drawing, colouring, gesturing, signing, and dramatic performance:

> I explained to the children about zoos by showing a picture book. I decided to let them play the roles of zoo animals with masks. In an interesting game, there were many animal and tree toys lying on the floor. Pairs of students were asked by a third student using sign language to find a dog, and whoever found a dog first won. I planned to provide materials to the children to create animal crafts so that they could use them to tell stories after they learnt the animal topic. However they had never experienced craft-making, so I firstly started to guide the children on how to create a simple fish craft with their hands using glue, scissors, and rulers. After finishing their creations, we discussed what a fish was, and how fish live and eat. After that, I brought a small glass pot with two fish that was in the school office to show it to the children and also showed a video to them. The students identified domesticated animals. I asked them what each animal sign was, and they gestured. In the B class, the older students knew the signs for domesticated animals because in their leisure time at the Happy Hands Deaf School hostel, the A and B students mixed, playing and talking together with animal figurines. The A class students sometimes liked to teach animal signs to the B students. I started to teach them animal signs with photos and videos from my laptop as well as demonstrating humorous role play as different animals. I also asked them what animals eat and where they live. Most of them knew the answers and were interested in expressing more about their experiences of seeing common animals. However in the B class, the older children wanted to learn animal words whereas some of the youngest children found it impossible to learn the English words intentionally, so they were encouraged to focus only on the signs. I decided that we had to act as zoo animals so that they would understand the concepts. So I started creating zoo crafts and drawing and colouring animal masks with the students who chose

individual animals in class. Then they started acting really funny as zoo animals with wearing animal masks for the older children and we welcomed the staff to come and visit the 'zoo' in class. It took a week to create the masks before the learners could perform as animals in their 'zoo'. In their free time in the evenings at Happy Hands, the A-class students sometimes teach the older B-class students basic signs including animals, classroom objects, etc by using pictures in books.

('Animal literacy', Feb 2019, Pal)

Because the micro-case studies were written from the perspective of the peer tutors, a way to augment the analysis would be to hold interviews or focus groups with the learners to find out which ways of embedding the topics were most useful and meaningful for them. Deaf learners are not a homogenous group, and the peer tutors were faced with the challenge of integrating their diversity into the learning situation (cf. Adams & Nicolson 2014). Future research might attempt to look into the learners' and tutors' ideas about the connections between activity, teaching and learning, which are cultural constructs (Ollin 2008; Adams & Nicolson 2014). Using Bourdieu's notion of 'cultural capital', i.e. the norms and practices that are most valued in the classroom (Bourdieu & Passeron 1977), we might consider what assumptions the peer tutors are bringing into the classroom and to what extent they are integrating the learners' own norms and practices versus imposing their own (Zepke & Leach 2007; Ollin 2008). For example, many deaf communities have a 'collectivist' orientation wherein expressions of group solidarity are valued as much as, if not more than, individual achievement.

4.3 Peer tutors' observations about learners' engagement with the topics

Across the project countries, the peer tutors worked with a range of class sizes, divided into adult and children learners. The peer tutors suggested that there were differences in engagement between the topics amongst their learner groups. It could be argued that through teaching in a peer-to-peer sign language environment, greater numbers of opportunities for dimensions of interaction and participation between deaf and hearing peers in a learning environment were able to occur. Interaction and participation between peer tutors and learners are a crucial preliminary step that enables future peer-to-peer learning and tutoring processes to take place (Kluwin, Stinson & Colarossi 2002).

On the online platform (SLEND) the peer tutors uploaded topic materials, new vocabulary, worksheets, grammar assignments and footage of discussions in sign language, all of which was available for students to access remotely. In Uganda, one peer tutor, Tonny, commented at first that they guided students in the use of SLEND, and later students were able to use SLEND independently. The platform was used by peer tutors for revision; for instance, in the 'Money' class, they used SLEND to revise previous topics as a result of some problems with videos loading. Issues with access to the internet were cited as factors which stopped learners engaging with the material in both Uganda and Ghana.

Over time, the SLEND material began to give learners a clearer outline of ways they could contribute in future classes. After prompts through class discussion of previous topics, students began to engage more in group discussion in the class. Students also did group activities, such as making a second clock activity. As sign language users, for deaf participants in the project, given the opportunity to learn in an inclusive, sign-language dominant environment arguably had considerable advantages in fostering firstly, socialisation, and secondly, engagement and learning (Erting & Kuntze 2008: 287).

Many peer tutors also made reference to group work and the confidence of their learners. For example, when teaching about the 'telephone' topic, Tonny commented that in group work, some of the class were high in confidence while others were low in confidence. Another peer tutor, Esther, noted that in their 'Andrew Foster' class, even the weakest learners could contribute and discuss ideas – perhaps because they were already familiar with the topic. For deaf participants in the classes, upon joining a new learning environment, they would have undergone processes of socialisation, where 'novices' gain new knowledge and skills to join a social group' (Ochs 1991). Socialisation can be observed through ongoing 'language practices and social interactions' through which 'novices' acquire social and cultural competence (Ochs 1991). These processes of gaining language confidence in English, as well as competence in topic material, would have differed between individual learners, and affected the confidence of learners in the class. It has been suggested that issues of sociality in a peer-to-peer teaching and learning context range from the extent of interaction and participation of learners in a learning environment, to sociometric status and affective functioning. One study split the process of peer-to-peer socialisation into the categories of social skills, interaction and participation, sociometric status and acceptance and affective functioning (Kluwin, Stinson & Colarossi 2002).

Another quote from a peer tutor suggests where real English literacies had a strong impact upon learner engagement. The peer tutor stated that

> learners were given a short sample sentence grammar using the word *buy* and its tenses. They tried but this lesson was so difficult for them, we kept repeating several times, for example "I will buy a new phone next week". We decided to use this grammar because it was easy for them and commonly used by them. One student told me that he will buy a new smart phone soon, so I developed the grammar topic from his question about how to write this in good English. He also asked what is the difference between *buy* and *pay*. Students were confused about the words *buy*, *pay*, *sell*, and *purchase*, and their past tenses, which had taken time for them to understand, but at the end of the lesson, I was glad that some of them can now write sentences using these words.

The peer tutor here discussed the struggles of learners to engage with written materials in English, and to construct sentences in a second language. The efforts made to teach English grammar were improved and simplified for learners through linking the exercises about past and future tenses with real-life concepts that were familiar to learners.

Often, the employment of overly complex English can be off-putting for deaf learners. Some peer tutors referred to enhancing student engagement through the use of 'activities and outdoor learning to learn by direct visual observation on the Real-life English in the environment' (Tonny). From reports across other classes, it appears that the use of real life contexts had many positive implications for learner engagement. By drawing on contexts from real lived experience, RLE offered a promising way in which to engage learners more thoroughly in lessons. In Esther's 'Menstrual Cycle' class, she commented that it had real world applications and relevance for the students, as many students in the class attributed their monthly cycle to sickness and many of the girls are worried about this so it helped them to learn more. In the 'Air' class, Esther suggested that 'linking grammar to the topic helped them to understand better', and although students were already familiar with the topic, as they had learned it in school before, by having access to more examples and RLE, her students claimed that they understood it better. It can be observed that through siting lessons within RLE, a positive impact on learners' participation and their affective functioning was achieved, as some of the learners' concerns or lack of knowledge about topics were addressed.

Another method through which peer tutors engaged learners in their lessons was the use of storytelling. In her 'Storybook' class, Esther commented that the storytelling encouraged her students to use their motor and cognitive skills, and that it was an exciting activity for them. It created a positive non-competitive environment for learning. Taking the view of literacy as 'the orchestration of particular language knowledge,' where the language i.e. English and the sign language, as well as the topic of study and skills required to participate in the classroom are all facets of literacy skills (Padden & Ramsey 1998: 7). Being able to both understand and later to tell stories that were personal to each learner were skilful ways in which the peer tutors engaged the learners.

Finally, learner engagement was impacted by a lack of background information, also known as incidental learning. In Esther's 'Family' class, she noted that many students struggled to identify cousins, nephews and nieces because they came from hearing families. The information is typical of details which would have been picked up by hearing children. It is clear that different routes must be taken to engage deaf learners, and address spaces in knowledge across teaching topics. However, it can be seen that where topics were familiar to learners, such as for Andrew Foster in the Ghana class, learners were more confident in expressing themselves and voicing opinions.

5   Conclusion

This chapter has looked into the decisions made by deaf peer tutors who were teaching multiliteracies skills to deaf learners in India, Uganda and Ghana. A set of 'micro-case studies' were analysed to see how the peer tutors characterised their decision-making processes and learners' uptake of the taught content and engagement in the classroom activities. The chapter began by exploring some of the literature on 'real-life English', including the use of authentic materials and meaningful contexts, and the kinds of challenges encountered when applying the multiliteracies approach, e.g. motivating and empowering learners, addressing their anxiety, and combining reading and writing with sign language, fingerspelling and drawing. Previous research into socio-cultural aspects of deaf multiliteracies was also presented, with a particular focus on agency, collaboration, and the importance of harnessing the expertise and role modelling of deaf signers.

Then, the method used to analyse the 46 micro-case studies was described, followed by a discussion of the results including how and by whom the RLE topics were decided, what classroom activities and

techniques were selected in order to use the topics to teach multiliteracies, and to what extent learners engaged with the topics. Overall, the analysis showed that the peer tutors were able to involve their students in selecting the RLE topics on many occasions, but still often had to devise topics themselves because the students did not know what an appropriate topic might be. They were able to use a fairly wide variety of methods to embed the topics, including text-based materials, drawing, fingerspelling, role play, and signing stories, with the last two proving to be particularly popular, especially amongst the children. It is unclear to what extent the peer tutors were able to build bridges from multiliteracies skills to English literacy, and what challenges they faced when making connections between signing and writing. This might be further explored by using the preliminary findings presented here to devise a fresh template with more in-depth questions for the peer tutors.

The unprecedented nature of this work created scope for valuable innovations, but also made it difficult to produce quantitative and comparative results. Future research should examine how the teaching of multiliteracies skills can be more meaningfully and empirically measured. Further studies might also look for ways to test whether and how much the provision of signing deaf tutors, i.e. deaf role models, improves deaf learners' emotional and psychological well-being, which is a trend that was observed during this project.

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Appendix

(all of the micro-case study documents)
1. India
   a. Adults at Indore Deaf Bilingual Academy
      - Diwali
      - Bio-toilets
      - Shopping
      - The zoo
      - Flight bookings
      - Snake bites
      - Application forms
   b. Adults at Delhi Foundation of Deaf Women
      - Railway reservation forms
      - Train tickets
      - Bank applications
      - Bank deposit slips
      - Weighing items for purchase
      - Ordering items online
      - Having a basic conversation
   c. Children at Happy Hands School for the Deaf in Binika
      - Time and maths
      - Food
      - Alphabet and names
      - Colours
      - Signs and words
      - Animals
      - Logic
      - Numbers
   d. Children at Indore
      - Maps
2. Ghana
   a. Adults at Senior High Technical School For the Deaf, Mampong Akuapem
      - Family
      - Life of Andrew Jackson Foster
      - Storybooks
      - Menstrual cycle
      - Air
      - Negation
   b. Children at Demonstration School for the Deaf, Mampong Akuapem
      - Pre-test
      - Flash cards
      - Pictures and reading
      - Animals
      - Conversation
      - Christmas
3. Uganda
   a. Adults at Uganda National Association of the Deaf Vocational Resource Centre
      - Telephone
      - Money
      - Nouns and verbs
   b. Children at Uganda School for the Deaf
      - Sign language to English
      - Colours
      - Who does what
      - Anna goes to school
      - Sicknesses
      - Clock activity
      - Labelling drawings
      - Identifying verbs

Identifying and meeting the training needs of deaf sign language users as professionals in deaf education contexts

Rebecca Olivia Nankinga

1 Introduction

1.1 Concepts and background

Today most countries try to pursue sustainable development as one of the most important factors in their future success. The role of human resources in sustainable development is central. So equipping the human workforce through teaching and training paves the way for reaching the goals of development in societies (Jalili & Mall-Amiri 2015). This is also related to the United Nations' Agenda 2030 which is committed to eradicating poverty and achieving sustainable development goals by leaving no one behind regardless of their status, age, religion or disability. Therefore, this chapter considers the training of deaf teachers as professionals in the education context, so that they can fit into this fast-changing world whereby if one needs to improve one's standard of living and secure a well-paying job, one is required to at least possess good academic qualifications.

Teachers are sought-after professionals around the world because it is through teaching that future generations are trained and equipped with practical skills and knowledge. Moreover, teaching can give people a chance to play a role in shaping society and reach their goals. Teaching is an 'art' and 'a profession [...] with a long and respected history' (Tauber 2007: 13). It can be one of the most rewarding and at the same time one of the most complex professions.

Deaf teachers, like other teachers, have the capabilities to carry out teaching tasks provided that they are well trained in aspects of leading, guiding, and moulding learners, as well as preparing learning activities and working together with their fellow teachers and administrators. However, there is still much to be done to ensure that deaf teachers have the opportunity to attain advanced knowledge, especially on literacy which is seen as challenge that most deaf people face generally. Thus, to investigate how to address this gap, a research project called 'Peer-to-Peer Deaf Multiliteracies' (P2PDM) was carried out from 2017 to 2020 in three countries: India, Uganda and Ghana. Its aims were to influence changes

in education systems to improve deaf people's capacity, empowerment, literacy, multiliteracies, and access to teaching, learning, achievement and employment (see Webster & Zeshan, this volume).

In the project, building deaf people's capacity meant increasing deaf people's skills as learners, tutors, teachers, and researchers. In a bid to further increase the capacities of deaf people, particularly those with experience of working with deaf students, a shorter project was undertaken from 2019 to 2021 in India, Uganda and Nepal called 'South-South collaboration in realising the impact of Peer-to-Peer Deaf Multiliteracies'. This focussed on deaf people's professional skills as 'Language and Literacy Trainers for the Deaf' as well as preparing 'Master Trainers' to train other deaf tutors to teach multiliteracies through sign language. This was an attempt to fill the gaps in the provision of deaf education in the three target countries. Access to good education has been and continues to be a challenge for deaf pupils. Part of the challenge results from a lack of qualified, trained teachers who are fluent in sign language and can efficiently deliver comprehensive lessons in their day-to-day learning. In contexts with deaf pupils, sign language communication is often the basis for comprehension between the teacher and learner. According to Ngobeni, Maimane, and Rankhumise (2020), when the teacher is not fluent in sign language and must, for example, resort to basic gestures, this creates an obstacle to understanding and the learners become confused and disengaged. Similarly, Gillen et al. (2016) note that children at deaf schools in India are commonly taught by hearing non-signers, which causes a lack of access to curricular content through sign language. This contributes to the failure of deaf education. It is presumed that when a deaf signer teaches a deaf student, the student finds it easier to understand the content than when they are taught by a hearing, non-signing teacher.

In addition, teaching deaf students is often regarded as one of the most challenging tasks in education (Marschark et al. 2009), partly because deaf students are perceived as slow learners. However, this is not the case when the teacher has knowledge of appropriate, deaf-friendly teaching methodologies and is well versed in deaf culture (cf. Ladd 2011 in relation to deaf pedagogies).

But while fluent signers may find it exciting to work with deaf learners, knowing sign language alone cannot guarantee that one becomes an effective teacher. For example, they need training in teaching methods. Deaf students are visual learners, and young deaf learners in particular are prone to boredom when faced with methods that put more emphasis on learning theoretically rather than practically (Ngobeni et

al. 2020). This requires one to be conscious of the different needs of learners, and many deaf teachers lack this knowledge due to having inadequate communication access during their own studies. There are deaf teachers who have completed education courses at university, but still do not have the required skills and capacity to teach deaf students. According to anecdotal evidence, some Indian and Ugandan deaf teachers who completed courses at university said they hardly comprehended what was being taught because they did not have interpreters. Some took teacher training courses where they had sign language interpreters but still often missed out on crucial information, for example when their interpreters were absent. Moreover, some of them struggled with note-taking, and had to rely on notes taken by their hearing course mates. Issues also arise during teaching placements whereby if there is a communication gap between the supervisor and deaf trainee teacher, the trainee can be left not knowing what needs to be done to improve their skills, while the supervisor is left unaware of the trainee's needs. Also, there are some deaf tutors who are fluent in sign language and skilled at teaching, but have not had the opportunity to write academic papers, which are often needed in the profession, especially for teaching in higher education. So although deaf tutors may make good teachers of deaf students and understand on a deeply personal level the unique challenges that their students face, they still might not be able to fully fit into the existing education system.

All this culminates into teaching inefficiency. Therefore, this chapter seeks to explore ways to improve the training of deaf teachers to prepare them for their professional careers within the educational context.

1.2 Research questions and aims

To find out how to develop the capacity of deaf sign language users who want to work in schools and in adult education, a guiding question was posed: 'How can the training of deaf sign language users as teaching professionals be improved in the education context?' Notably, in the context of schools it has been argued that deaf teachers are masters in teaching their own peers due to the communicative fluency that results from their use of sign language, and this increases deaf children's opportunities to develop age-appropriate linguistic and social-emotional skills (Golos et al. 2018: 64).

However, as mentioned above, knowing sign language is not enough to become a well-trained, professional teacher and support learners to achieve academic progress. Thus this chapter seeks to answer the question of how best to train deaf teachers for the benefit of their careers

and students' academic success and wellbeing. To answer this question, three objectives for the research were set out: 1) to identify the problems that deaf sign language users encounter in the teaching profession; 2) to find the best practices to be recommended for use with deaf learners in the teaching process; and 3) to suggest how to improve the training of deaf sign language users as professionals in deaf education contexts.

The remainder of this chapter is organised into three sections. Section 2 explains the sources of data, as well as the methodology and procedures for data collection and analysis. Section 3 discusses the findings and their implications for practice and training, including challenges experienced by teachers, solutions devised by the tutors and research assistants in the project, and best practices noticed in the teaching-learning process. Lastly, section 4 draws conclusions from the findings and offers recommendations for the future.

2 Data and methodology

This section focuses on the methods and procedures that were employed in the research, and introduces the setting and participants as well as the sources of data analysed for this chapter, which were i) peer tutors' reports, ii) research assistants' reports, and iii) micro-case studies (MCS).

2.1 Generating and collecting the data

The procedure involved consulting the researchers in the project team and carefully studying the reports and 'micro-case studies' written by the peer tutors and research assistants working in India, Uganda and Ghana, in which they had reflected on pertinent issues that arose while they were conducting classes.

At the beginning of P2PDM, three deaf research assistants (RAs) from Uganda, India and Ghana were trained in 2017 in India for three months by the project's principal investigator and co-investigators. They then went back to their respective countries and contexts to implement the research with the newly appointed deaf peer tutors (PTs), who carried out the teaching. P2PDM involved three partner institutions in India, and two each in Uganda and Ghana. In India, the data came from the teaching of several classes where the RAs and PTs extracted information to assist in data collection. The first involved two classes with a total of 22 pupils at Happy Hands School for the Deaf (HHSD), which is a primary school. At the second site, the Indore Deaf Bilingual Academy (IDBA), PTs taught a class of 10 children at primary level and a class of nine young adults.

Lastly, data were gathered from a class of 12 deaf adults at the Delhi Foundation of Deaf Women (DFDW).

In Uganda, there were two classes that provided data. One was at the Uganda School for the Deaf (USD), which is a day and boarding primary school. This class had 21 children, but data were drawn mainly from 11 of them. The other class was a group of 15 adult learners at the Uganda National Association of the Deaf (UNAD), which has a vocational training resource centre for deaf adults. This group had a mixture of both continuing and final-year students. The two classes in Ghana were a primary school class of 13 pupils at Demonstration School for the Deaf (Demodeaf) and a class of 15 adult learners at the Senior High Technical School for the Deaf (SHTSD). They were also final-year students, and some of them had been with the project for two or three years.

The RAs observed the PTs' lessons and often assisted by co-teaching with them. Periodically, the RAs undertook evaluative visits to the classrooms and created observation schedules about what they had observed. The PTs focussed on teaching and classroom interaction with the learners and collected samples of what the learners produced. These samples were used as portfolios. The PTs wrote their own reports with the help of bespoke templates on a weekly and/or monthly basis. Importantly, the reports included self-assessments by the PTs and notes on learners' progress, which are main areas of focus for this chapter. Analysing the self-assessments allowed me to examine the specific challenges that the PTs faced. The notes on the learners' progress helped me to identify issues that the learners encountered before, during and after the lessons, and then use the findings to link back to the teachers' experiences and suggest ways to make improvements. This analysis included all the reports available in the project's secure file storage area; those which contained similar issues were noted and used. This was done by searching for key terms in each report.

The micro-case studies (MCS) have a format that includes the various sources of data in the wider P2PDM project as a whole, such as the PT and RA reports, the portfolio samples, and video recordings of classroom interactions with the learners. This format allowed the research team to select specific areas to focus on, track how learning progressed and how content was delivered, and make suggestions. It is important to note that the MCS unified the different sources of data in one document consisting of written text and hyperlinks to other relevant files (reports, portfolios, etc.). For this chapter I focussed mostly on where the following items were mentioned in the MCS: learners' portfolios; learners' ages; learners' skills such as signing, reading, and interacting; PTs' and RAs'

observations; and the teaching duration and sequencing of a particular topic. The MCS highlight details of how learning took place including the activities carried out and materials made by the teachers or the children or by both together. Figures 1 to 5 show some parts of the PT and RA reports and MCS that were used to identify challenges and best practices.

Part 5	Feedback from students
What did students enjoy?	This month the children liked narrating their Clock Activities when they did it in Sign language for example **waking up, brushing teeth, bathing** among other activities.
	They as well enjoyed acting and imitating the verbs which we practically did as whole class verbs like **washing clothes, plates, sweeping the classroom, running** around these all excited the children and each of them in turns wanted to try some actions out.
Questions about learners' progress	When I asked them what they learnt so far in our lessons, 8 of them could recall what they learnt either in written form, signed, role played or finger spelt.
	They could try to memorise words like washing plates, lawn mowing and then construct simple sentences with guidance for example she is washing plates, He cooks soup, He walks fast and so on.
	They practiced to role play and sign expressively.
How did students feel about progress with English?	In English, the children did get familiarised with the pronouns, Nouns, verbs and grammar.
	Also they learnt to recognise words that seem similar but differ in meaning for example cook and cookies, Grass and Grapes

Figure 1: A screenshot from the part of the PT report form about tracking learners' progress. The feedback from students was obtained by asking them questions as well as by observing them. For young learners, observation was used most often because sometimes posing questions to them is difficult; as they are very young, they would be unlikely to understand questions related to the project's objectives.

PART 3

SAMPLES of what students learned, for the PORTFOLIOS

Each month (or after the end of a unit of lessons), please collect one or two samples of an activity or task the students did. This is so we can see what they have learned. If your class is not too big, please collect a sample from each student. If you have a big class, try to collect samples from 8-10 learners, not more. Please make sure that each month you collect samples from the SAME learners. This is so we can see how they have improved and learned more things.

SAMPLE 1
Topic: **Please tell us what you did with the students to create these portfolio samples. Please describe this in detail, and include all the activities that are related to the sample. How many hours did you spend on these activities? How often did the students work on a task or a skill (in other words: how long did they take to learn this?)** Also, tell us what grammar work you did. How did you decide what grammar to work on? How did you find or make exercises for the students?
Before started the lessons; Peer tutor asked learners to draw or name the RLE topics they are interesting to learn.it was interesting starts, this work was individual, later Peer tutor selected one topic "**Telephone**" and divided students into two groups, with a task questions to do about the Meaning of phone, importance of phone, types of phones. And each group make a presentation on Poster and explain. It was interesting because all learners participated as each learn from each other. It takes 2hours not yet finished the presentation. Only one group was done in two hours because the topics was interesting and learners have questions and discussion with each other, they were confused about different words such as "**Phone**", "**Telephone**', "**Mobile phone**', **Mobile money**", **Cell phone**, **Smart phone**" and many others words. so, we discussed and explained them the differences with sample pictures.

Figure 2: Part of the PT report related to the portfolio samples. This part highlights how the learning progressed, how long it took to produce the work, and the role that learners and PT/RA played during the teaching and learning process.

PART 4   Self-assessment of peer tutors

What was positive for you?	The children are open and free with me, they see me as one of them so I feel this peer to peer teaching brings me closer to them and I get to interact with them to understand their educational background as well telling me freely what they like and dislike during and after lessons. This helps me make adjustments.
What was difficult for you?	Explaining some English grammar rules and words was difficult for me. For example i couldn't explain why we use **the** in some sentences. It is difficult to separately explain grammatical words at times.
How did you work with others in the	My RA and PT visited and helped me manage the class by doing the filming and explaining to the other learners. We have a good teamwork and spirit.

Figure 3: A PT's self-assessment. This is another part of the PT report that was especially important while collecting data. It gives detailed feedback on what the tutor experienced while interacting with the students in and outside of the classroom.

C.   The topic

- I found some relevant books with black and white pictures including birds, a tiger, a house, a ship, etc., for the students to practice coloring using color pencils, filling in the pictures and letters. It reminded me of them coloring pictures very messily before, so I bought the picture handouts to them to practice so that they could improve their coloring skills.

- After the students coloured a picture each by using coloured pencils, we discussed what the object was and how it was useful. Then I showed some videos related to the picture so that they learnt the concepts well (e.g. what a train does and what the railway staff do).

- I also found a book of brain boosting activities which was very useful to the students for learning whilst having fun, so I chose at least 15 relevant different activities from the book because I wanted to improve their logic and concentration. Most of the students were below 6 years old and these kinds of activities were new to them. Before attending school for the first time, they had only communicated a little with their parents who did not know sign language.

Figure 4: An extract from a MCS. The part about the topic highlights who chose it (learners or tutor) and why it is thought to be important for the learners to study.[1] Coming up with themes is a skill that some of the teachers lacked, so it is helpful to look at this section about the topic to identify what learners want and its relevance to their day-to-day lives.

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1 See Webster and McEwan, this volume.

E. The observation

> They learned well about the reservation form topic. But they had less knowledge of the vocabulary items. They needed to learn more words. They liked the activity of working with the forms.
>
> They are interested in learning on SLEND. They also liked to watch the picture and videos in ISL from the SLEND. The SLEND had showed the words and videos in ISL to explain the meaning of the vocabularies in ISL from the SLEND.
>
> L1 was interested in writing the sentences herself. L2 and L3 also tried improve their sentences. L4, L5 and L6 had been struggling a little with writing to make the sentences. I helped some of them make these portfolios.
>
> They made these portfolios for the first time. They were not able to do writing before. They could learn more sessions on the SLEND so it can be useful for them to learn something new. This is because there are many sessions that could be beneficial to them.

Figure 5: The observation part of a MCS, describing what the tutor observed about the learning. This section explains which learners were confident and which were not and why; indicates to what extent the teaching methodology worked; and reveals whether the topic and activities interested the learners. SLEND, which stands for Sign Language to English by the Deaf, is an online platform that was created on Moodle by the researchers and populated by the PTs to facilitate online learning (Panda 2021). The learners themselves accessed their lessons on the SLEND with guidance from the PTs.

Table 1 gives an overview of the numbers of PT and RA reports and MCS that were analysed for this chapter.

Table 1: Summary overview of data sources

Type of data	Number
PT reports	12
RA reports	05
MCS	10
Total	**27**

Table 2 shows an overview of the data used to examine several taught topics. These topics comprise a sample selected from all of the classes and lessons in all three countries. The topics chosen tended to be those with an ample number of supporting documents that were easy to follow, with clearly stated dates.

Table 2: Overview of data listing the country, learner group, report forms and MCS files for each teaching topic

Country	Topic of teaching	Learner groups	Report forms	MCS
Uganda	From SL to English	Children from USD	RA and PT reports Feb 2019	MCS Uganda Feb 2019
	Colour		PT report July 2018	MCS Uganda July 2018
	Who does what		PT and RA reports Oct 2018	MCS Uganda Oct 2018
	Telephone	Adult learners from UNAD	PT report Oct 2018	MCS PT1 October 2018
Ghana	Word (pictures reading conversation)	Children from Demo deaf	RA and PT reports June and July 2018	Ghana.DemoDeaf. June and July 2018
	Animals		PT and RA reports Nov 2018	MCS Ghana Demo deaf Nov 2018
	Family	Adult learners from SHTSD	PT and RA reports June 2019	MCS SHTSD June 2019
	Clock Activity		PT report June 2019	

Table 2: continue

Country	Topic of teaching	Learner groups	Report forms	MCS
India	**Zoo**	Children from IDBA	PT report from Indore	N/A
	Electricity from SLEND Session	Adult learners from DFDW	PT report May 2018 DFDW RA reports from India	N/A
	Drinking water			MCS DFDW June 2018
	Railway reservation and SLEND	Adult learners from IDBA	PT report	MCS IDBA July-Aug 2019
	Working with application forms			
	Working with improving knowledge on time rules and maths	Children from HHSD	PT reports from HHSD	MCS PT2 HHSD Oct 2018
	Working with animal literacy and sign language		PT report	MCS PT2 Feb 2019

The data in Table 2 relates to the work of children aged 6 to 12 from four primary schools (one in Uganda, two in India, and one in Ghana), and MCS about the adult learners, who ranged in age from 15 to 25.

2.2 Coding data and categorising quotes

This sub-section focuses on how the data was coded and how the comments were categorised. First, a range of issues were identified from two sources: the self-assessment section of the PT reports, which discusses the difficulties and positive outcomes experienced by the teacher; and the observation schedules from the RA reports which highlight how the classes progressed. The issues identified vary from challenges encountered during the teaching process, to best practices and reflections on learners' progress. Then, the MCS were consulted to find out how the teaching was carried out and why learners did or did not have trouble understanding the content. The MCS served as a bridge to finding topics linked to improving the training of deaf teachers as professionals, in particular the sections on the teaching sequence, observations and recommendations (lessons learnt for improvement in the future).

The issues were then divided into main themes (general key issues, such as 'teaching grammar') and sub-themes (smaller issues that fall under the main theme, such as 'difficulty in explaining English'). For each sub-theme, a description of the implications it had on the teacher and learners was written, followed by quotes from the PTs and RAs, along with a suggested solution and finally evidence and citations from the academic literature (see Figure 6). Some of the issues are not directly discussed in the available data, so for these, external experience and knowledge is applied. This experience comes from what I witnessed and experienced as a deaf tutor and project staff member myself (who therefore compiled some of the reports and MCS), and the observations that I made whilst taking part in the project activities. I also generated the external data through in-person and online interaction with other peer tutors.

3 Findings: Issues for practice and training

Several main themes and sub-themes were found in the research, indicating the core challenges that deaf teachers encountered in their teaching experiences, as well as their best practices. It became apparent upon looking at the reports and MCS from the three countries that most of them contained similar, repeated issues. These issues were identified by considering the linguistic, psychological, physical and social factors that appeared most frequently in the data. They were then grouped into sub-themes and from there into main themes (see Table 3). This section presents an analysis of the four main themes: managing diversity (3.1), teaching grammar (3.2), teachers lacking a background in pedagogy (3.3),

and teachers being embedded in an existing school setting (3.4). Each sub-section examines the routines, experiences, and problems faced by peer tutors in relation to the respective theme, and possible solutions found in the reports and MCS.

Issues reported	Implications	Quotes	Solution	Literature
a.Teaching Grammar: Difficulty in explaining English	Using pictures in teaching enhance understanding especially for the weak children. They are able to identify the activity using the picture and can easily talked about what they see in the picture.	This activity enables both the weak and strong learners to easily remember the words taught matching the pictures and without the pictures, they could write the words. The weak learners especially the youngest ones were able to read the words correctly with the aid of the pictures. . (**MCS.Ghana.Nov 2018.Demodeaf)** We need to focus a lot on reading. E.g. while reading and signing a sentence e.g. 'OLIVIA IS EATING' children only signs two words (OLIVIA and EAT) dropping IS. We need to get strategies on how to explain why 'IS' has not been signed and what is the purpose of having IS that is never signed in a sentence. Whether it is a grammar, need to clarify how it is used.(**MCS Ug.Children.Feb 2019)**	Because, teachers have difficulty in explaining English: Explaining English through games method can be adopted. English games ideas can be created by language experts along with tutors who had used the game methods in Deaf schools as best practices.	
No resources of using Sign Language to explain English	Most Deaf teachers are fluent Sign language users however most of these sign language users also have less English knowledge thus poses a question on how can teachers teach English to the Deaf learners. Sign language resources used to teach English are not readily available as of yet. There is	I felt that it has difficult deeply explain in English grammar linked to this topic. Hence, I searched internet for NO & DO NOT so I felt little confuse but did not properly to find for this topic NO & DO NOT so I tried better explain this.(**Deepu PT Report.May 2018)**	Identifying and developing expert teachers as mentors and coaches to support learning in their area(s) of expertise for other educators such that measures and innovations on developing sign	
Peer Tutors own English competency	This can pose a problem to their career as Teachers. In this, teachers are required to do write up reports, prepare lesson plans and create learning activities however, these requirements may not be met due to the fact that some Deaf teachers feel they are unable to express or complete a task which requires English thus the learners can miss out on learning. We see tutors have skills to teach and interact with learners as far as sign language is concerned.	I felt that it has difficult deeply explain in English grammar linked to this topic. Hence, I searched internet for NO & DO NOT so I felt little confuse but did not properly to find for this topic NO & DO NOT so I tried better explain this.(**Deepu PT Report.May 2018)**	PTs joining English classes to build on their English competency by giving them sustainable duration to get enough time to learn, practice, implement and reflect upon new strategies that facilitate changes in their practice. They can then adapt what they learnt in their classroom.	Jean F. Andrews and Thomas C. Franklin asserts; The 1990's also brought wider acceptance of the bilingual-bicultural (bi-bi) philosophy for language instruction. This philosophy incorporates a set of methods which uses American Sign Language to teach English (Strong, 1995; Mahshie, 1995; Vernon & Daigle, 1994). Deaf teachers
				play a vital role in the bi-bi model because most are fluent users of ASL.

Figure 6: A screenshot showing how the qualitative data was extracted and categorised using topics, sub-topics and quotes from the available files and academic literature

Table 3: Main themes and sub-themes found in the data

Main theme	Sub-theme
Diversity in learning	Comprehension levels Knowledge of sign language Different levels of confidence and expression Age differences Learning by repetition
Teaching grammar	Difficulty in explaining English No resources for using sign language to explain English Different levels of English among learners Peer tutors' own English competency Teaching writing too early when learners are not ready
Knowledge of general pedagogy	Struggle with classroom management Limited skills in preparing learning activities Teachers spend a lot of time making learning resources Creativity Skills in structuring lessons
PTs working within other institutions	Lessons outside of the core timetable are too limited Possible conflict with the school management Lessons are in addition to an already existing full-time timetable, and younger children especially are already tired from other classes Absenteeism as a result of students being tired from the regular core classes

3.1 Managing learner diversity

'Diversity in learning' is attributed to psychological and social factors. A learner's environmental upbringing can affect their learning abilities. For instance, in the 'critical period' for language acquisition, if language deprivation and poverty of stimulus happens alongside a child's cognitive development, this may lead to later difficulty in understanding concepts when they are at school (Hall 2017).

This can be difficult to manage for hearing teachers who have completed general courses but have little or no experience of this kind of language background, as well as for deaf teachers who have not undertaken special needs education courses which in most instances cover early childhood and language studies. The age of a child is also

relevant to this theme, because learners of different ages have different levels of readiness to consolidate complex content. A number of PT and RA reports found varied patterns for this; for example, in some countries, the younger learners aged 6 to 9 understood better than the older ones aged 9 to 11, whereas in other countries the younger ones needed a lot of attention and help to understand concepts.

The theme of managing learner diversity refers to how one can manage and handle people with different perspectives, mixed views, and unique learning abilities. For example, a class can have some learners who are quick to catch on while others need more time. This can be seen in part as a difference in levels of comprehension, which means the understanding and interpretation of what is read or being presented. In the data, the PTs and RAs observe several times that these skills varied widely among their learners:

RA3 (June-July 2018): 'Despite repeating one subject for a good number of days, learners – especially the young – still forget longer vocabulary words and some continue to misspell words …. Some learners do not remember longer vocabulary words; they instead prefer shorter ones'.

PT1 (Oct 2018): 'The majority of them use things around them such as telephones but don't know their names or how to write them; they only know to express them in sign language. These students also have different abilities in learning. Some understand fast while others took longer and needed to see images which ended up consuming lots of time. Some learners need the tutor to repeat the lesson/topic on the next day before proceeding to the new lesson'.

RA2 (June 2018): 'One learner has some confidence in creating sentences, but she is not good with ISL (Indian Sign Language) fluency. That's why I want to encourage her to have more confidence and practice in ISL. She learned in the computer lab and tried to write the sentences herself during class. Then the sentences looked better'.

The quotes above show that in a classroom, teachers will encounter learners who have diverse learning needs. They will comprehend the material at different speeds, and some will be confident and eager to participate while others remain reserved. Some will have ample knowledge of a sign language (e.g. Indian Sign Language) while others will have less. The teacher needs to allow for this diversity.

Some quotes from the data imply that using pictures and doing role plays in teaching enhances understanding, especially for the youngest learners. RA3 (Nov 2018) stressed that the pictorial activity he used 'enables both the weak and strong learners to easily remember the words

by matching them to the pictures. Then they could write the words without the pictures. Eventually even the youngest learners were able to read the words correctly with the aid of the pictures'.

Similarly, PT2 (Feb 2019) said 'I explained to the children the word *zoo* by showing a book photo and other stories. Some of them understood better, but not fully, so I decided to let them play the roles of zoo animals with masks and create materials and stories so that they understood the concept better'.

These examples illustrate that young children are able to identify an activity using pictures and actions and can easily talk about what they have seen and done. The teacher can harness role play to teach vocabulary by asking learners to take on characters to portray the behaviour of people and animals in the surroundings. They can then consolidate in their memories the names of the people, animals and behaviours they learnt about.

Additionally, learners' memory and comprehension levels also improve when they are taught repeatedly. This repetition can be facilitated through recall exercises, asking learners to take charge as teaching guides, and/or modifying or changing the way content delivery is done, e.g. using games or spaced repetition through question-and-answer sessions. Bruner (2000: 1) notes that 'repetition [is] primarily important to learning, rather than teaching. If one adopts a student-centred teaching approach, repetition will be a very important tactic for enhancing learning'. Rock (1958) also observes that repetition often seems necessary for learning; most participants in his study required repeated exposure to the list of items they were trying to learn. He states that the role of repetition is to help us retain what we have already learned, which is why it is important to undertake reviews and put in place extension activities so as to help learners memorise what they had learnt.

Therefore, skills on lesson structuring, preparation and applying repetition in learning are needed, in order to make learning engaging, comprehensive and interesting. By way of repetition, a teacher can, for instance, teach about a theme under one subject, then pause to see if the lesson is comprehensible to the learners. Then the next day, he/she can modify and change to another subject but with a similar theme. After some time, the same theme can be reintroduced by reviewing and using another method of teaching, such as using game ideas to do maths, or proposing various extension activities.

In a session that I taught in July 2018, the learners were first asked to mention colours they knew and could fingerspell. Then they were given blank sheets of paper to colour on and invited to mention what colour

they were using. On another day, the session continued with the tutor signing a colour and the learners then writing the English word for it and using it to colour the other side of their paper. In a third session on this topic, there was another paper-based exercise which required learners to fill in blank spaces with colours and colour words. In the free time they had during the session, the learners practised writing the colours on the blackboard and wrote more of them correctly compared to when the session had started.

RA3 (March 2020) observed: 'For better learning and enhancing recalling of what children have learnt, drills are an important teaching and learning tool that the children need most. They learn better and memorise words easily when learning is repeated'.

The implication of this is that teachers need to know how to deliver material in a repeated manner without making the lessons boring for the children. One way is by having teachers take turns to teach the class on the same topic. Sharing the teaching of a topic enables the learners to stay engaged and allows the teacher to reflect on his or her teaching methodology as s/he observes the other teacher carrying out the same lesson. By observation, teachers will be able to reflectively note down their strengths and weaknesses in their daily teaching schedule and can devise ideas on how to teach from observing the other teacher and understand what interests learners. This will help the teachers make room for improvement in teaching.

Co-working can be implemented so that teachers can support each other before, during and after lessons. For instance, a teacher can consult a colleague who is well versed in English grammar so that s/he gets clarity before carrying out a lesson. During the lesson, one teacher can deliver the material up to the point when they feel they need help, and then invite the other to take over. This may enhance comprehension among learners as well as allowing deaf teachers to observe each other and build their skills and professional development.

Drago-Severson (2004: 7) asks, 'How is it that the very same curriculum, classroom activities, or teaching behaviours can leave some learners feeling excited and their needs well met, while others feel deserted or lost?' Her answer is that learners use different combinations of ways of knowing, including 'a socializing way of knowing', which uses 'relations to other persons or ideas'; 'instrumental knowing' which is a 'concrete, external, and active orientation to the world'; and 'self-authoring knowing' in which learners 'take responsibility for and ownership of their own internal authority'. She notes that learners do not need high levels of formal education to use these ways of knowing:

'some learners with limited formal education nonetheless demonstrated developmentally complex ways of knowing'.

The implication is that deaf teaching professionals also benefit from awareness about these different styles of knowing in their students. However, there are some specific considerations for deaf classrooms. Firstly, deaf people are known to be strongly visual, so visual ways of learning and knowing have particular priority (Akach 2010). Secondly, deaf teaching professionals also need to have some self-awareness about their own ways of learning and knowing because it is likely that in their own education, they have missed out on building up some of this awareness. Training programmes must equip teachers to engage in reflective thinking about themselves, so that they can later apply this thinking to their learner groups.

My own experience as a practitioner and trainee has been that there is a mixture and a diversity of needs that varies from learner to learner in terms of comprehension. This underlines the importance of peer support, where learners are put into pairs of one weaker and one stronger learner. This is a formal, organised way of harnessing peer support, but peer support can also be accessed informally in other ways.

Drago-Severson (2004: 10) concludes that, because of this diversity across learners, 'a new definition of the "resource-rich" classroom is needed including good pedagogical matches to a wide variety of adults' learning needs and ways of knowing', and language teachers should 'develop an understanding of this new variable - a diversity of learners' ways of knowing - [and] use a diversity of approaches in meeting and supporting learners with a diversity of learning needs and ways of knowing. Adult learners inevitably differ in ways that are less immediately apparent than that of more familiar pluralisms of race, gender, or age'. Those learners who catch on faster and/or have more advanced sign language skills can provide peer support. The more a learner is exposed to the social setting of learning alongside more advanced peers, the faster she catches on. RA3 (March 2020) observes that 'In order to improve children's learning outcomes, they should be paired by having smart learners work with the weaker learners such that they share ideas and support each other to find the words in the puzzle. The smart learners are always ready to assist the weaker learners by providing assistance and peer teaching'. It is worth noting, however, that while socialising learners to use peer support might be the primary strategy for this particular context, in other cases it may be appropriate to group children according to ability, and to provide differentiated activities for each group.

A teacher can also use visual images and downloaded videos to emphasise meaning where learning by writing and reading is difficult. PT4 (Dec 2018) states, 'One major problem was that some of the children, especially the weak learners, found it difficult to recall animals with longer names, for example *elephant* and *crocodile*, and they mostly misspelt *horse* as *hores*. There was repetition, and yet these children continued to make mistakes'. It takes effort and time for learners to consolidate unfamiliar and longer vocabulary items. For instance, when using pictures/drawings to match with a vocabulary item is felt to be insufficient, longer words can be split into two so that learners can practise one part first followed by the next part, e.g. *croco-dile*. Learners can also be taken on field trips to view the things they have studied, for example to zoos and museums.

With regard to learners' different levels of confidence and self-expression, PT1 (Dec 2018) states that 'some of the learners are quite reserved such that they need to be called out to participate. Some learners have low confidence. In the group discussion, a group leader helped them. Three participants, Rose, Alex and Derrick, were confident, while others lacked confidence and were slow at learning. The difference might be traced to the level of their academic experience; some of them like Rose and Alex reached high school while others stopped in primary school. Other reasons are due to their family background. Some learners go to school later [after the critical period]. According to the research, a child learns more easily below 2 years of age'.

In my own teaching experience (October 2018), during presentations of lesson content all the children were very active. Most were fast and very innovative, giving multiple answers, while others were slow and less innovative. Ellena, Serah and Vassa[2] were helped by their peers to comprehend the lesson content, as they needed more time to acquire the new vocabulary. More time was devoted to help the slower learners get on the same level as the others.

PT1 (October 2018) added that the learners 'have different abilities in learning; some understood quickly while others took longer and needed to see images [...] Some learners need more time and attention and need the tutor to repeat the lesson again before proceeding to the new lesson. Some learners have low confidence, and needed the group leader to support them during the group discussion'.

Part of this is because of introvert and extrovert behaviours in learners (Godsey 2015). Such differences can be eased by encouraging

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2 I use pseudonyms here to refer to my learners, whereas PT1's learners are referred to by their middle names, as per the method used in PT1's reports.

learners to take part in the learning activities in a way that is comfortable for them, without making them feel left out. For instance, if one learner is more reserved, the teacher can ask what s/he thinks of a comment that another learner made. In other ways, being in the company of more social learners can encourage interaction and help them become accustomed to taking turns.

Teachers can develop their ability to cater for diversity in learners' levels of confidence by having consultations with colleagues and engaging in workshops and lectures on the psychological and behavioural tendencies which are commonly seen among learners. When teachers access training on managing diversity among learners, this has the double benefit of enabling them to handle their students more competently and encourage participation more effectively, as well as allowing their learners to achieve better results (Taole 2020). This kind of training and consultation creates a foundation of awareness among the teachers that facilitates self-reflection, which can be actualised through the use of self-reflexivity diaries or dialogue journals (Catalano 2018). This practice helps teachers to pinpoint gaps in their skills and best practices in the classroom, and to maximise their continuing professional development.

It is increasingly acknowledged that teachers must take care to study and understand the needs of introverted students, and avoid assuming that extroversion is the norm or the ideal (Godsey 2015). Trying to force introverted pupils into situations that they would find uncomfortable or demeaning is likely to have a negative impact on their learning. This means that teachers should prioritise the needs of both extroverted and introverted students in order to give them equal access to educational programmes. Ways to do this include having quiet sessions where the learners are given some extra time, for example to improve their reading on their own. Another strategy is to assign class leaders from each category of learners.

In summary, if the teacher is equipped with skills pertaining to handling different learner behaviours, it becomes easier to identify areas of improvement, and learning yields more positive results.

3.2 Teaching grammar

In the theme of 'teaching grammar', the teachers' difficulty in explaining English can be attributed in part to a lack of resources and guidance, which is a material factor leading to a scarcity of deaf-friendly explanations. For example, the absence of a teacher's guide and visual grammar resources for the learners results in a heavier workload for teachers having to create such resources, which renders them unable to carry out teaching

activities smoothly. Challenging linguistic factors include both the PTs' own varied levels of English competency and different levels of English among the learners, since most of those who are born deaf acquire both their first and second language at a later age, e.g. while at school (Murray et al. 2016). This is especially the case for those with hearing parents who know little about deafness; this is why some deaf people struggle to consolidate both languages at the same time, resulting in English not being properly acquired (ibid.). This factor causes many roadblocks for tutors when they aim at an effective teaching career, and for learners when they aim at good comprehension of English.

Grammar can be defined as the language structure followed in oral, written and signed communication, including rules governing the construction of words, phrases and clauses. Grammar varies across different natural languages, and learners of English need to be exposed to English grammar to acquire knowledge on how to create sentences that adhere to English word order. Grammar refers to the study of rules on not only syntax but also phonology, morphology, semantics and pragmatics.

Teaching grammar to deaf learners is challenging since in most instances, English is a second language that they did not gain exposure to until a later age. Moreover, there are very few resources for teaching English in most sign languages. Andrews and Franklin (1997) argue that, in the context of their study in the US, most deaf teachers, especially those who are prelingually deaf, have minimal competency in English although they make good teachers and can help deaf children translate signs into simple English words and sentences. This raises the question of how deaf teachers who are fluent sign language users, but have lower competence levels in English, can teach English to deaf learners.

Instead of always requiring deaf teachers of language and literacy to score highly on standardised measures of English, another possible route is for educators to cultivate the deaf adult's ability to explain English by introducing a language and literacy trainers' course specifically for deaf teachers who want to advance their skills in English. In this route, emphasis can be put on ensuring that the teachers are amply ahead of their learners in English competency, so that they are able to explain the language, rather than requiring the teachers to have mastered English entirely. As we have seen above, these teachers are masters of signed language and understand deeply the issues facing deaf learners. Thus it is easy for them to reach their fellow deaf learners and help them to develop self-esteem, which is an essential foundation for second language acquisition and for learning generally (Kuntze et al. 2014). Upon completion of the course, the trainees would need to do teaching placements where they can practise

delivering sessions in order to boost their professional pedagogical skills as well as building their English competence.

RA2 (May 2018) stated: 'I felt that it was difficult to deeply explain the grammar linked to the real-life English topic [of signs and notices saying something is forbidden, such as 'no smoking' or 'no parking']. I searched the internet for NO & DO NOT. I felt a little confused about how to properly explain this grammar'.

PT5 (June to July 2018) agreed that '[i]t is very difficult to explain the English grammar that matches the real-life English topic'.

An example of a challenge with explaining English grammar also occurred during one of my teaching sessions (Feb 2019). While reading and signing the sentence *Olivia is eating*, the children only used two signs (OLIVIA and EAT), and did not represent the word 'is' in signed form. Strategies are needed for explaining why the signers omit the word *is* and what the purpose of this word might be, given that it never appears in a signed sentence.

While explaining English grammar was sometimes a challenge for the tutors in our project, the literature and evidence shows that deaf teachers' signing fluency can be harnessed to enable them to expressively explain the meaning of vocabulary and sentences. In the 1990s, this model of language instruction, called the 'bilingual-bicultural' or 'bi-bi' philosophy, became widely accepted and began enabling deaf teachers who are fluent in sign language to play a central role in deaf education (Andrews & Franklin 1997). With knowledge of English grammar attained through schooling, training and certification, deaf teachers can use their signing fluency to instruct deaf learners and support them to learn English through their shared sign language.

One of the indicators that deaf teachers are good role models for deaf learners is that they understand issues related to their own background such as bilingualism and biculturalism. This gives them the ability to determine appropriate content delivery for deaf learners. The limited knowledge of English that some deaf teachers have, which may arise from a lack of exposure to English or from early language deprivation, can be remedied by encouraging them to attend bespoke courses where they can improve on their English skills as well as their teaching expertise. In order to provide such opportunities, it is necessary to identify and deploy expert teachers as mentors and coaches to support learning in their area(s) of expertise. These expert teachers can also spearhead the development of sign language resources for use in schools.

Another way of explaining English grammar is through using existing or bespoke games. Deaf tutors who have been exposed to the

use of games at deaf schools may already know some best practices in this area. When we engage deaf teachers in creating materials for English teaching, this results in innovations and ideas which are closely suited to the needs of deaf learners, because the teachers themselves know these needs well, from personal as well as professional experience. Papen and Zeshan (2021) describe an innovation called 'English grammar games', which aims to facilitate learning about grammar in a way that is creative and motivating.

In relation to teaching grammar, the reports revealed an issue with delivering writing instruction too early when learners were not ready. Before any teacher starts teaching writing, it is important for them to consider the background and readiness of their learners. This is why early-years and nursery teachers in mainstream schools tend to start their lessons with colouring, drawing, physical activities, and reading as well as sign language for the deaf students. Because the learners have just started school and their language experiences are limited to signing or speaking their first language at home, usually writing is not something that they have personally done, and it is not appropriate for the teacher to start with writing sessions. If writing is imposed on them when they are not ready, they are likely to be less focused and less interested in learning concepts, and the teacher may fail to meet the desired lesson objectives. The implication of this is that before moving on to guided writing, learners need to first internalise a concept by visual means, including drawing and signing as well as reading.

Teaching writing too early when learners are not ready involves both linguistic and psychological factors, including effects linked to self-esteem and confidence where sign language skills have not been valued (Kuntze, Golos & Enns 2014). 'Not ready' means that they have had little if any engagement with written texts or even with language generally. This is common because most deaf learners' upbringing starts from a home where parents and other family members do not use a visual language, so when they are brought to school, they need to first be furnished with an accessible language which they can use to become familiar with written texts. Later with time, they can gradually start practising writing. This is related to early childhood development, because writing is a new and abstract activity for young learners. These learners are more likely to engage with visual, practical, and play-based activities.

The three quotes below show examples of teachers making changes to their lesson plans when guiding learners towards writing activities, adapting their strategies according to the ways that the learners responded.

PT2 (Oct-Nov 2018): 'I asked each continuing student to guide one of the new students to learn and practise signs and English words using flash cards; however, the youngest children were only expected to learn the signs. I let the children write words in their books following the cards. Most of them drew and wrote messily, so I provided some papers with lines and circles on which the children could practise writing and drawing the same concepts again and again'.

PT4 (June-July 2018): 'In our activity, we provided the children with A4 sheets about parts of the human body. The children were to look at the pictures and write the corresponding words. It was deduced that none of them could write, so the RA and I changed the aim by writing all the names of the body parts on the board and added other dummy words so the children could identify the body-part words and write them in the appropriate column. It was challenging for the children to remember and write the words when the pictures were not visible to them'.

PT2 (Jul, Aug and Sept 2018): 'I realised that the English writing activities were not suitable for the new students to learn in the beginning of the year, so more signing activities should have been firstly done for them instead, with less writing'.

According to Farrant (1982), good teachers should understand their students' abilities and have mental flexibility, so that they can test out new methods and implement them into their work plans if they are effective. Ideally, in my view, emphasis needs to be put on a teaching methodology which emphasises visualisation, comprehension and physical interaction in order for the learners to properly assimilate concepts in flexible ways. For instance, RA3 (Jan 2020) reports that 'the topic of the lesson was fruits, and pictures of fruits were projected on an overhead projector for all the children to see and talk about' (see Manavalamamuni 2021 for an in-depth discussion of using visual materials with learners in our project groups). By using projected images and captioning, learners are able to comprehend the visualised images and connect them to the written words, and to signs. The combination of different languages and modalities in learning multiliteracies is investigated in Ahereza (2021), which focuses on working with primary school children in India and Uganda.

The explanations above about visual content are also supported by Nugent (1983), who states that research findings:

> underscore the importance of visuals in deaf education and confirm the effectiveness of instruction that combines pictorial and written presentation modes. Students are able to use both visuals and print in captioned instruction, and they evidently employ a strategy that

allows them to alternate between the two and utilize each to its best advantage.

Moreover, deaf learners will study effectively if learning is carried out in a form where emphasis is put on consolidation rather than merely following a given syllabus. In many instances, teachers just follow the syllabus given to them instead of first studying the *learners'* requirements to determine whether and to what extent they are ready for more advanced tasks that involve writing. To promote a learner-centred approach, a teacher's manual that uses sign language with detailed information pertaining to working with deaf children in aspects of reading, writing, signed expressions, cognitive knowledge and creativity needs to be put in place to further guide the deaf teachers. Teachers could refer to such a manual for more detailed directions, which would in turn yield positive outcomes for their learners and for their own careers as professionals.

3.3 Teachers lacking background in pedagogy

Pedagogy is an academic discipline which involves the study of how knowledge and skills are imparted in an educational context, including the interactions that take place during learning. Knowledge in general pedagogy is therefore crucial for a teacher since it provides guidance on how to handle the learning process. This knowledge is related to managing people and resources, as well as creating a harmonious and communicative environment, making it both a social and a linguistic factor. Linguistic considerations also pertain to the language barrier that deaf sign language users face in terms of accessing teacher training courses, as they are often unable to achieve the required entry points for higher education. Social issues relate to teachers' lived experiences, what they already know and do not yet know, and the implications this has on their profession and the behaviour of the learners. Some teachers are too ensconced in their immediate school setting, which prevents them from seeking outside experiences and being exposed to wider knowledge. At the same time, being embedded in a school setting benefits the teacher in terms of social and psychological aspects and enables her to be closer to her students and attend more fully to their needs.

Because there is no training for deaf teachers of deaf learners on how to manage a classroom, they will find it difficult dealing with students who have varied behavioural tendencies. For instance, PT4 (March 2019) reports that 'I had difficulty controlling the pupils when they sat down for the test. They could not sit well and kept moving about and disturbing others who were trying to pay attention'.

Due to lack of pedagogical training, some teachers may resort to punishment believing it will instil discipline, but in reality, this negatively affects learning and self-esteem. Oliver and Reschly (2007: 8, cited in Jalili & Mall-Amiri 2015) argue that 'Effective classroom management requires teachers to be adept at employing multiple strategies and to be skilled at recognizing when current strategies are ineffective and modifications are necessary'. They also highlight the need for systematic preparation and professional development of teachers' classroom management skills with a range of learners.

Equipping learners with successful teachers who have satisfactory abilities in classroom management may also require factors such as personality type, which influence these abilities, to be taken into consideration. Since teachers' personality traits affect the teaching and learning process, it is essential for teachers to be aware of these traits and understand themselves. They can take advantage of observing the classes of other teachers with similar or different personality traits, discuss with them afterward the techniques they used, and try to apply the successful ones in their own teaching. Thomason (2011) notes that the personality of the teacher, and the traits that make a teacher successful, has been an area of interest in educational and psychological research for many decades because it is an influential factor in successful classrooms. She states that personality studies create an opportunity for teachers to have a better understanding of themselves and their roles in classroom communication. This understanding may cause an impetus for change and adaptation. Harris (1998, as cited in Shindler 2010) indicates that each teacher has his/her own exclusive personality which is the origin of the specific teacher's personal style of teaching and classroom management. Although classroom management style originates to some extent from attitudes and pedagogical choices, when the field of personality is taken into account, it becomes clear that each teacher can discover their own individualised way to translate his/her personal style into an effective teaching behaviour.

Braden and Smith (2006) suggest:

Utilize all your strengths. Under this category is preparation. Students are well aware of the unprepared professor. This causes a loss of respect, but also can lead to disruptive behavior. Additionally, use available tools, DVD, PowerPoint, and other media; today's students are not wired for a 75-minute lecture. If you are aware of weaknesses, devise goals and then seek assistance/training to improve. It is imperative to determine students' learning styles and to develop

strategies to meet all students' needs. When students are engaged in the classroom discipline issues should be minimized.

In relation to the statements above, we will notice that some teachers will not be very skilled at planning learning activities. Teachers need to be up-to-date and keep records of work done. However, if they are not trained in terms of lesson planning, managing resources and preparing learning activities and materials, this can become a barrier to a complete and smooth learning environment.

For example, during my teaching interaction with the learners (Feb 2019), I initially could not explain in simple language why we use *the* when writing sentences. There were also some signs I could not differentiate, for example the similar signs HOLIDAY and REST, because I did not prepare in advance how I should teach the topic for the day.

Moreover, creativity in terms of designing materials for construction was challenging for me (June 2019). When constructing model houses with a group of children, I could hardly find any materials apart from clay and paper boxes. In the end, we produced only two types of houses, one made from clay and the other from paper. This implies inadequate preparation before starting the lesson. Sometimes teachers get stuck in the middle of the lesson due to failure in preparing beforehand how learning will take place with readily available teaching methodologies as well as teaching materials.

However, there were some teachers in our project who would creatively make use of online learning materials to make learning engaging. It is important to learn from such best practice in making use of online resources. According to PT2 (October 2018),

> I found simple time exercises using Google. After I had exercise papers printed, one was provided to each student. They practised the exercises. Then their results were partially good. Their results helped me understand how they found it difficult to understand in some of the teaching methods. In a slow way, I explained to some weak students by face to face interaction during evening homework while the rest of them practised clock exercises which they drew at least 15 times. In another activity, after three of them had drawn clock cards and answer cards, I provided the same cards to each student, so that they could practice and learn how to match correctly.

My understanding is that preparing learning involves identifying learning objectives, planning the specific learning activities, planning to assess the students' understanding, planning to sequence the lesson in

an engaging and meaningful manner, and having a realistic timeline, as well as planning for a lesson closure/conclusion. Structuring lessons was a challenge for some of the teachers in our project. The result is that learners end up not understanding what the teachers are explaining, and the teachers themselves digress and fail to achieve the intended objectives with learners. Often teachers make the lesson rather complex with no room for consolidation.

Theme-based learning can also be affected by a lack of structure. Optionally, one theme can have various smaller sub-themes aligned with different traditional school subjects. For example, the theme of 'Forests' can be relevant to science, environmental studies, English, maths and other subjects (see Zeshan, Panda, Papen & Gillen, forthcoming, for examples). However, when the teacher is unsure of how to structure a lesson, important sub-themes may not be covered.

The following examples show how different kinds of learning activities can build on each other. In particular, it is noticeable in these examples that the learning activities unfold over time, taking several days or a week, instead of being packaged into individual self-contained 'lessons'. The tutors are planning a natural flow of activities, connected to learning that is applicable in real life. PT7 (July-August 2019) states:

> I saw that some of them did not know the meanings of 'state', 'surname', etc., in application forms for jobs, college courses and bank accounts. I decided to explain about the importance of these words in an application form. First, an application form was shown to them and they read it and discussed in pairs. I gave an explanation of 'signature', 'education' and 'experience'. They identified the new words and put them on the whiteboard, and each student stood up and explained the meanings with my support. I also encouraged them to practice writing sentences. Last, I gave them a game where English sentences are translated by each student into ISL sentences. With my help, they changed their incorrect sentences to correct ones. After that, they were doing their portfolio activities for 4–5 days. This RLE topic was taught for 7–8 days in total.

RA2 (June 2018) states:

> [The tutor] and I taught them about the [railway] reservation form. He made his example reservation form himself to show them. He and I put the new words on the whiteboard. He also taught the new vocabulary items and explained the meaning of these words in ISL with me. They divided into five groups that had only two learners in

each group. The groups had shared and discussed these railway forms with each other. They learnt for a week. They filled in their own reservation forms at the end of the topic. But we did not collect these portfolios. He [the tutor] did not choose English grammar from RLE topic. But they learned well about railway reservation forms despite not working with their English grammar for this topic.

The quotes above imply that early preparation is crucial if one is to get desirable learning outcomes. With early preparation, the suitable way to teach deaf students is by having an inter-connection of subjects and/or related activities, so that learners easily understand and remember better.

Also care should be taken to structure lessons in a learner-centred way, in which emphasis is placed on the needs of learners by asking learners what they would wish to do or study. There are some good practices in our research contexts where some teachers tried to meet the learners' needs, as the following accounts reveal (see also Webster & McEwan, this volume).

PT2 (p.c. September 2020) said that mostly his lessons are based on what students like. For instance, he made a continued lesson based on the learners' ideas when he noticed children playing by planting a seed in a small tin. They put the plant inside the house which does not favour germination. Thus he decided to teach about photosynthesis, which turns out to be science. Because plants grow due to the availability of water and sunlight, he took the learners outside to observe a grown tree with fruits. Here learners were asked the number of fruits both when added up and when subtracted, which is a mathematics activity. Finally, based on the same fruit tree, learners were asked to draw the tree and name its parts, which is both arts and English.

We notice here that learning unfolds in a continuous manner with one theme touching on different subjects, which makes it easier for the learners to understand. Moreover, the teacher can adequately prepare because the topic is not new for each lesson. If teachers work in pairs, they know where to continue from because this teaching method involves reviews and handing over from where the former has stopped.

From my past experience working with children, sometimes lessons are taught in a connected manner in which subjects are interconnected and overlap with each other. For example, I introduced a topic of building and building materials (June 2019) whereby we studied the different types of houses and materials needed to build a house. Then I asked learners what type of houses they would like to have in future; this was done practically by encouraging learners to model houses of their choice. Then

at a later time, we continued working with stories that were related to buildings, including the story *The Three Little Pigs*. In this way, this theme led to several sub-themes in different subjects at different times.

Keeping in mind the needs of learners by consulting them is the role of the teacher if s/he is to construct an interesting lesson. This calls for the teacher to be approachable in interactions with learners. In addition, working hand in hand with others in the team can assist the teacher in terms of materials design, getting advice and peer support. If there is team building and teamwork, the other teachers will feel motivated and get to learn new skills, which increases their capacities. Peer observation of teachers can be done to help young teachers learn how one manages a classroom amicably. Also, producing written or video case studies of teaching can be useful; such materials can provide curricular models and modelling of instruction strategies, e.g. lesson plans, unit plans, and samples of students' work (portfolios), among others.

3.4 Teachers being embedded in an existing institutional setting

The setting of the learner groups in our project has been such that most of these groups were embedded in an existing institutional set-up. All groups of primary school age children were embedded in schools for deaf children, and groups of young adult learners in Ghana, in Uganda, and at one of the Indian partners were also embedded within existing secondary school or adult learning provisions. The only setting where a group of learners was specifically constituted for working with our project was at the Delhi Foundation of Deaf Women in India. In this section, learner groups are referred to as 'P2P' groups (from the project's abovementioned acronym P2PDM), and the classroom activities as 'P2P teaching' or 'P2P research'. Unlike the above sections, this section relates more specifically to the context of the P2PDM project. The issues identified here highlight the complexities of implementing a new experimental approach within an existing institutional context. Being aware of such issues may be helpful for practitioners and researchers in similar contexts.

The project's setting of working in such contexts at times raised concern among the research team and the project partners over the appointed tutors playing a double role. I observed that teachers tended to be overly involved with the internal school setting and its associated administrative set-up, as exemplified below.

My experience as a practitioner is that, more often than not, I would be too immersed in general issues of the school all day and often take part in the school's activities, which limited my opportunities of seeking knowledge pertaining to deaf education in the form of workshops or

training by education policy-makers. I missed out on a wider exposure to other educationalists' views and opinions. The only time I participated in such events was when we prepared for our own project workshops (so-called 'collaboratories') with other stakeholders, which happened only once in a while.

Similarly, when one is within the setting of a regular school or adult learning centre, the institution's administration perceives that the project personnel are working under them, which in turn brings about possible conflict with the school management. For instance, I was tasked to teach English as a subject in the class where I was carrying out teaching for the research project. This brought about confusion among other teachers of the same class because they felt I had taken up a lot of time for one subject against the core timetable. I had difficulty balancing between the project's work, which was my priority, and the subject teaching delegated to me by the school. Therefore, I would stay at the school for additional hours to cover both tasks every day. In so doing, some of the relevant topics were not covered adequately, teaching was not always done properly and as a result, satisfactory research output was not fully obtained.

In addition, being embedded in an existing school context meant that lessons took place outside of the core timetable, and hence hours for learning activities were too limited. This was an issue in all primary schools, except the Happy Hands School for the Deaf, where we had full flexibility to implement the project at all hours. At the other institutions, classes were sometimes not given enough room or ample time because the pre-existing timetable was concentrated on the school's fixed syllabus and activities.

PT5 (October 2019) wrote 'Students also spent the afternoon after examinations to create their own RLE [Real-Life English] topics by filming and having a discussion about their topics in pairs. There was an Inter-House quiz competition so no classes. There was an education visit so no classes today. Day 3, 4 and 5 classes were not held because of school activities'.

These factors limit the completion of a topic by the teacher working on special projects such as P2P, since s/he has to make room for other teachers to take charge. By imposing such limits, many sub-topics will be put on hold due to inadequate time to cover them. Hence the research teams missed out on some much-needed data for research and measurement on how far learners were progressing in the P2P teaching methodology. Lessons were in addition to an already existing full-time timetable, and the younger children especially were already tired from other classes.

This was the case in Uganda, where I experienced some instances in which lessons were interrupted because learners were expected to do examinations, or take part in assemblies in case visitors happened to come to the school, or girls participated in the girls' initiative clubs. Because of such conflicting activities, lessons were sometimes postponed to after lunch hours when the young children were tired and would prefer to play instead. In Ghana, lessons with young adults in the secondary school were sometimes conducted in the evening hours after the normal school activities were completed. This can affect the level of concentration because there is no time given to the students to rest and re-energise.

From these observations, we can conclude that the expected participation level and output sometimes was not achieved in our learner groups. At one institution, the normal school timetable for the lower classes could start as early as 8am and finish as late at 4pm (though not continuously). These youngsters would get tired so when it was time to call them for P2P classes, we noticed uneasiness among some learners because they wanted time off to go play in case lessons were conducted after lunch hours.

On the part of the teacher, s/he is also required to take part in all these activities. So while s/he is focused on participating in regular school life, there will not be time to prepare learning resources, self-reflect on the teaching progress, assess the learners' progress and make weekly reports because other external roles are being delegated to the teacher. General knowledge about educational policies, sign language, and teaching methods among others are crucial for a deaf teacher because it is a benchmark to education practices for effective planning and managing of lessons in a classroom. Therefore, if a teacher misses out on this for lack of time, this negatively affects both the learners and the teacher as a professional.

PT5 (Sept-Oct 2018) says that at her project school in Ghana some students came to class late due to their daily activities. This lateness is attributed to the fixed core timetable which gives less room to the P2P teaching. In most cases, students are required to complete either the notes given to them by the teacher or the exercise that needs marking the next day. In another example of the timetable allocated to P2P teaching, a particular adults' section in Uganda has lessons scheduled for morning hours. However, PT1 (July 2018, p.c.) says: 'students report in low numbers or miss the class well knowing that there is no punishment in case one misses or is absent. They know P2P class is very flexible where no stricter punishments are carried out'. On the other hand, there were few or no interruptions during these allocated morning hours, unlike

with some of the other groups where PTs were required to change and adjust depending on issues that may arise within the school setting.

Whereas we have seen some negative implications of the above, there are also positive impacts which other schools recorded in terms of best practices such as timetabling. While most of the schools mentioned in the three countries had timetables scheduled according to the school's main calendar and syllabus, one of the primary schools, the Happy Hands School for the Deaf in India, had its own flexible timetable, so there were fewer interruptions to P2P activities. P2P lessons normally started in the morning when learners' minds were fresh (10am to 12pm). This school adjusts flexibly to different teaching approaches. For example, drawing and games are normally taught after lunch hours so that learners are kept lively and interested (PT2 Oct 2018). When there is a smoothly functioning timetable, it is easier to arrange for learning activities within the classroom.

Another issue has to do with the physical environment of the institutions where the P2P project was embedded. For example, in terms of seating arrangements, deaf cultural norms favour sitting in a circle or semi-circle where everyone can see each other to communicate in sign language. For some classes, P2P teachers adjusted the seating arrangement after the main syllabus for the day was covered by other teachers.

According to RA1 (April 2019):

> The setting is not perfectly set as we would love to see. This is the arrangement made by the school for their own lessons. Class 3's seating arrangement is in rows similarly to those used by hearing children/students. There is a blackboard and the PT uses white chalk, duster, ruler. However, we try to adjust while making demonstrations or showing pictures by making a semi-circled seating arrangement with P2P registered children sitting in the front row and those not registered seated in the back row. Also during story telling children are seated in circles with PT in the middle.

PT4 (Dec 2018) states that: 'There are a few problems with the seating arrangement. I tried to change the seating in the classroom and it was difficult but I have thought about how pupils were sitting in a half circle was okay'.

These two quotes show that seating was adjusted to suit the P2P teaching methodology. However, some other classes did not require adjustment because the arrangement was already suited to the P2P method and deaf culture.

PT2 (Feb 2019) observes: 'The students in the circle sit on the floor while the peer tutor stands and sit the chair in front of them. There is a whiteboard, printed rupees notes and weight, some vegetables installed to show the students in the classroom'.

Regarding his adult class, RA2 (January 2019) also observes: 'There is good space in the classroom. The students were having good tables and seats. They have a TV and whiteboard. The peer teacher explained in the front of the classroom either standing or sitting. He always explained during the lesson using a laptop connection with the TV showing and practiced writing sentences using the whiteboard'. He also noted, with reference to one of the children's classes (Jan 2019), that the children had a seat and desk each, arranged in a half-circle to allow them to have contact with the peer teacher, which is appropriate for deaf culture.

In conclusion, the project points to the need to empower teachers with skills to manage student wellbeing by involving them in policy discussions and creating a conducive environment for them where they can smoothly carry out teaching and learning activities without disruptions. A conducive classroom enables learners to learn comfortably.

Besides, teachers are encouraged to amicably settle conflicts that might arise as a result of logistics, timetable clashes, or clashing duties, before the implementation of classes. The institution's administration should clearly be aware of the new situation and should endeavour to involve the class teachers when such programmes are introduced, to avoid confusion and sidelining the new personnel. If teachers/researchers are skilled at solving issues peacefully and reaching mutual understanding, the result will be a smooth running of the programme.

4   Conclusions and recommendations

Many important challenges have been identified, as well as examples of best practices which this chapter highlights so that they can be integrated in educational settings with deaf learners if the peer-to-peer teaching methodologies are endorsed for use by practitioners and policy-makers.

The findings indicate that when teaching literacy and multiliteracies to deaf learners, managing diversity is quite a challenge. Therefore, there is a need to have regular, e.g. quarterly, training for deaf teachers so that they learn skills to build their teaching capacities and report on progress in order to receive further guidance. This training can involve placing emphasis on practising self-reflexivity and not being too shy to learn from others by having peer observations, because learning from each other increases the chances of avoiding mistakes.

Having consultative meetings can also help teachers get ideas and advice on how learning can be carried out and how to solve the challenges one may encounter during the teaching-learning process. This is something that was done successfully in the project. For instance, if teachers cannot solve the issue of learners with diverse needs, they should emphasise teamwork, sharing their experiences with others. Help can be offered in terms of co-working, guidance, and peer observation. This is in line with establishing peer support groups in order to recommend solutions for managing a classroom and improving one's literacy because it is easier to confidently express one's problems, and share experiences and good practices with fellow peers rather than with someone much more senior.

Another approach is to have exchange visits to other schools and share or observe how others are doing with respect to issues such as managing diversity (sub-section 3.1) and how learning is facilitated (sub-section 3.3). This will boost teachers' skills and enable them to apply new skills in the classroom.

As Tauber (2007) notes, classroom management can be taught, but as it is a broad concept; training sessions usually are not sufficient. Therefore, a teachers' handbook needs to be drafted and put in place in order to further guide teachers on how to manage the classroom environment, which is seen as a challenge by many (sub-section 3.3). Hence whenever teachers feel stuck, they can always revise with the help of such a handbook so that they know what to do in case challenges arise.

Besides, mock teaching can also be used because in this way one can indirectly learn how to deal with disruptive classrooms as well as improving oneself on teaching strategies, which is attributed to self-reflection. By mock teaching, one's capacity and knowledge is built, which enables improvement in teaching language and literacy/multiliteracies.

In order to improve on teaching English grammar (sub-section 3.2), setting up a course of study for deaf teachers to learn advanced English is recommended so that they gain new theoretical and practical knowledge applicable in their day to day careers. Inventing as many 'English through games' materials as possible for teachers to use with the learners is also recommended as these showed promising results when they were tested during our research (see Papen & Zeshan 2021). Teaching English, in particular grammar, had emerged as one of the main challenges in our learning contexts, both in relation to teachers' own skills (sub-section 3.2) and in relation to diversity in learners (sub-section 3.1). Sometimes it will take a lot of time giving extra hours for those who are slow in catching up

with concepts due to being unfamiliar with sign language and English as the second language. If games are used, this can help ease some difficulties.

Generally, a bridge course that current and aspiring deaf professionals can take prior to studying at university needs to be put in place, since we have noticed that our deaf staff members make excellent teachers due to bilingualism and biculturalism. Such a programme would train them in using English and improve their literacy knowledge. Bilingual and bicultural competences mean that they are well versed in deaf issues including education, but they usually lack good academic qualifications and their English is below average. Therefore, if a bridge programme is put in place, it would enable some to access further studies in order to attain academic credentials and confidently apply for teaching jobs.

Emphasising creativity and use of visual materials in order to resolve difficulties with explaining English needs to be considered, since deaf people are visual learners and easily remember things in visual modes. Hence it is advisable to make sure visual materials in terms of textbooks, charts and English language resources both online and offline are updated continuously so that there are always new improvised materials for the benefit of both the learners and the teachers.

In relation to new deaf teachers becoming embedded within an existing school setting (sub-section 3.4), it is advisable to engage teachers in policy discussions pertaining to the education of deaf students. This is in order to create awareness because apart from parents, teachers are considered closest to the learners and they know about their educational and habitual needs.

Introducing a sign language subject syllabus in schools, so that hearing students can also learn to communicate with their deaf peers, will be beneficial in the longer term. This would lead to appointing fluent sign language users in schools for the deaf, easing communication with deaf children at home, influencing policies to ensure sign language is given priority, and knowing the needs of deaf learners. Also, if a sign language course is approved as school subject, there is a chance for integrating qualified hearing teachers who might meet the minimum qualification to teach deaf students, so long as they are fluent signers. Working together with deaf teachers by co-working will achieve inclusion goals with readily available tools for teaching. There are other possible innovative solutions here as well, such as schemes where staff and children from hearing and deaf schools work and socialise together.

In order to solve the issue of knowledge gaps in general pedagogy, strategies for teaching deaf learners need to be examined and reformed where necessary. Suitable teaching methods for deaf pupils are not

often in harmony with current theory and practice of current education systems, which are standardised in almost all countries of the Global South regardless of the special learning needs of some categories of people. For example, the textbooks used do not favour deaf learners, and if deaf teachers are to use them in the teaching-learning process, not all content will be comprehensible because the materials and content are designed in such a way that suits hearing people. A flexible curriculum needs to be adopted so that teaching is totally learner-centred and lesson activities are planned according to the learners' interests (cf. the chapter on 'reverse curriculum' designs in this volume). In order to do so, teachers need to be well equipped with the knowledge on how this is done by carrying out trials before actual implementation.

In addition to teaching grammar, teachers need to develop a self-conscious habit of reading and private study if they are to improve on their own English grammar knowledge. Learning is a continuous process and therefore, not all content will be taught in specifically designed academic courses. Therefore, instead of depending solely on taught course content, aspiring teachers are encouraged to do independent research and read newspapers, magazines, and literature.

Keeping records of work done for future reference and comparison by the teachers is also an essential part of teaching practice. These records continuously remind teachers what needs to be done and what needs improvement. This is also beneficial to new teachers who might seem lost in the learning environment. When records are in place, they might find guidance and hence the issue of gaps in pedagogical knowledge is eased.

Last but not least, because this chapter has presented research in an underexplored area by a deaf practitioner, which is rare, a next step could be to harness more deaf expertise by establishing a Deaf Education Research Laboratory. This laboratory's researchers would aim to enhance creativity and innovation, study how to remove or ameliorate barriers to quality deaf education, and investigate the feasibility of various teaching and learning methods to use with deaf learners. They could also research the implementation of methods such as those exploited through the P2PDM project, including games, theme-based learning, and integration with official textbooks via a 'reverse curriculum', and investigate the extent to which these might be successful on a longer-term basis.

Acknowledgements

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PART - II

The reverse curriculum: Game-led design for accessible learning

Ulrike Zeshan

1   Introduction

A centrally important idea when working with deaf learners on literacy and multiliteracies in projects led by the International Institute for Sign Languages and Deaf Studies between 2015 and 2021 has been that learning should be meaningful and accessible for the learners. In addition to having an accessible language of communication in the classroom, i.e. a sign language, making the content meaningful has been of central concern. In work with deaf adults on English literacy, this was addressed by working with authentic life-relevant samples of written English, referred to as 'Real-Life English' (RLE) by the research group (otherwise known as 'real literacies'; see Street 2012; Papen & Tusting 2019). In addition, learners themselves were very involved in selecting and curating the learning materials according to their interest (Zeshan et al. 2016; Fan 2018). In later work, the teaching and learning of English grammar became a particular matter of concern in terms of how RLE could be combined with the systematic grammar work that learners were asking for (Papen & Zeshan 2021).

We maintained this learner-centred approach when work shifted from 'deaf literacy' to 'deaf multiliteracies'. Hence in our subsequent work with deaf primary school children, we relied on theme-based learning. The most advanced design was used with groups of children at the Happy Hands School for the Deaf (HHSD) in rural Odisha, India. Learning journeys avoided timetabled sessions on separate subjects prescribed by a fixed curriculum and instead evolved organically in collaboration between the tutors and the children.[1] Some of the results of this approach are reported in Pal (this volume) and in Pal, Webster & Zeshan (this volume). As research progressed, learning activities with the children broadened from a focus on multiliteracies to the inclusion of additional domains, for example mathematics, science, or art. From

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[1] In some of the other primary schools we worked with, our classes replaced or augmented the teaching of English as a subject. Theme-based learning also took place in these contexts but not as explicitly as at HHSD.

time to time the classes pursued longer learning journeys along cross-disciplinary themes.

For both adults and children, we experimented with game-led design of learning activities, and the aim of this chapter is to illustrate examples of this approach used with learners in India. With young deaf adults in India, we designed a game for teaching English, in particular English grammar. This was motivated by the substantial difficulties that groups of tutors and learners experienced with this area of learning (see Papen & Zeshan 2021). With primary school children, the game-led design supports learning journeys that cross subject divides.

A learner-centred approach has major implications for the role of curricula, whether pre-existing or created by learners, in the new ecosystems of learning that have emerged from such educational experiments (cf. Fan 2018 on ecosystems of learning). In fact, our game-led designs have characteristics that are the opposite of the traditional use of set curricula in some respects, which is why I use the term 'reverse curriculum'. I first compare the reverse curriculum to the traditional use of set curricula as widely applied in education in India (section 2). In section 3, I discuss the game-based design for working on English grammar with adult deaf learners, focusing on how this design is related to the idea of the reverse curriculum. Finally, section 4 describes an incipient game design for applying the reverse curriculum to theme-based learning with primary school children, which is at an earlier stage of development. The motivations for using each of these designs, as well as the limitations, are summarised in section 5.

2   Traditional use of curricula and the reverse curriculum

In the educational system in India where the reverse curriculum innovations originated, there is by and large a top-down approach with established curricula supported by prescribed textbooks as the starting point. Standardised assessments gain increasing importance in later years of schooling, leading up to national board exams. Curricula and textbooks are subject-specific. Teachers may have little autonomy in how the curriculum has to be delivered, and "usually see their job as 'completing the syllabus'." (Institute of Development Studies 2019). This is not to say that there cannot sometimes be cross-cutting activities, such as 'project weeks' or 'activity days' but these would be exceptional. Likewise, India has a rich diversity of alternative schooling options (e.g. Montessori schools) as well as home schooling and 'unschooling', but

overall, these options are organised privately and only taken up by a small number of parents.

In our work with children at HHSD, we started without reference to any set curricula or textbooks. This is partly due to the specific issues around early language deprivation and linguistic development that young deaf children face (cf. Humphries et al. 2006), as in the vast majority of cases, no language input through sign language is available within the families or in the immediate neighbourhood, especially in rural areas without strong deaf community organisations. Therefore, a primary school for deaf children such as HHSD first needs to focus heavily on language acquisition in order to counter the likely effects of early language deprivation in the family. As time goes on, however, there is value in using textbooks and in linking back to standard curricula (see section 5). This can be done increasingly as children become fluent in sign language and more confident with literacy.

Likewise, after adapting to their roles as active participants in the learning process, adult learners of English benefit both from flexible and life-relevant learning and from linking in with a well-organised progression path for making progress with English grammar. The reverse curriculum concept arises from this interplay, and tension, between flexible learning and structured learning.

In a traditional approach, pre-set school curricula and associated subject-specific textbooks are the starting point for teaching. Subjects are conceived of as separate from each other, each with its own curriculum, and making links between subjects is a matter of chance or individual initiative. By contrast, in a reverse curriculum approach used at primary school level, there is a shift of perspective by focusing on integrated learning across different subjects, which are linked with each other by design. The aim is not to cover curriculum content but to make learning meaningful, with the teachers in a facilitator role and different subjects connected in a storyline (see Section 4 for an example). Because of the emergent nature of learning, creativity is built into the process, and progress is monitored in multiple ways (cf. Pal, this volume, on learner portfolios). The role of standard curricula is not as a starting point but as a final checkpoint, for mapping activities at the end of learning journeys.

Similarly, English language teaching in India tends to follow a set syllabus, although there is more flexibility as to the choice of syllabus in contexts of adult education. In the reverse curriculum approach, the game design allows for easy cross-checking with any set curriculum at the end of learning activities, instead of setting out from the start to cover the content of the curriculum.

Much of this learner-centred and flexible approach is of course not new, if we think of Montessori pedagogy, for example. In our context, the innovation consists in using game design to facilitate the learning processes. This is motivated, among other considerations, by the fact that we worked with deaf peer tutors at HHSD who did not have any formal training as teachers (cf. Nankinga, this volume). The implications of this are discussed further in Section 5.

Table 1: Traditional and reverse curriculum compared

Traditional curriculum	Reverse curriculum
Curriculum is the <u>starting point for teaching</u>.	Curriculum is the <u>final checkpoint after learning</u>.
The aim of lessons is to cover the content of the curriculum.	The aim of lessons is to make learning meaningful.
Design of teaching is content-led.	Design of learning is game-led.
Lessons from different subjects are not connected.	Different subjects are connected in a storyline.[2]
There is a natural link with standardised assessments.	There is a natural link with flexible monitoring of learning journeys.

The differences between using a curriculum in the traditional way and a reverse curriculum design are summarised in Table 1. I now turn to a discussion of two examples of how this approach can be implemented in practice, both of which use a game design.

3   Reverse curriculum with English grammar for adult learners

In our work with young adults in India, the use and role of a curriculum for English language evolved over several phases. Originally, we compiled a functionally based curriculum calibrated according to level A1/A2 of the Common European Framework of Reference (CEFR) for second language learning, adapted to the special situation of deaf learners (see Waller, Jones & Webster, this volume). However, when actual learning activities were carried out in tutor-led groups, classes were based on what real texts students or tutors brought to the classroom to discuss, and the programme of learning was evolving rather than structured. The functional curriculum

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2 That is, to the extent that different subjects are potentially involved in the first place. In the case of English grammar games, other subjects are not in the scope of the activity.

was used as a cross-reference only, and actual classroom activities essentially involved learner-generated curricula based on the 'Real-Life English' idea. As the research moved on to multiliteracies, the issue of how to combine learner-generated and life-relevant activities with the learners' demands for focusing more on English grammar remained pertinent. Some young adult learners in Ghana and in India were explicit about needing direct instruction in English grammar.

Against this background, our international training programme on language and literacy between December 2019 and June 2020 worked with the English grammar issue again, among many other topics. In this context, the idea for English grammar games was born (see Papen & Zeshan 2021).

English grammar games work by going through the following steps (see the Appendix for game instructions using an actual example text):

–   At the beginning of each session, a Real-Life English text is presented to the learner group on paper or on a screen (ideally a text that learners themselves have chosen earlier).
–   A number of abstract grammatical structures, prepared in advance by the teaching team, are uncovered (on slips of paper or on a shared screen if online) one by one. At least one example of each structure occurs in the RLE text. For example, *[THING]s and [THING]s* is an abstract structure.
–   Players take turns to identify the part of the RLE text that matches the grammatical structure on the card. For example, the phrase *fruits and vegetables* occurring in the text matches the structure *[THING]s and [THING]s*.
–   When the target structure is found, all players write additional examples with the same structure and compare what they have written. This can optionally be combined with a meta-linguistic discussion.

Figure 1 shows the game in progress with a group of players (a dice has just been rolled to select the next player to take a turn; the screen is at the front out of view). This approach avoids focusing on a grammar-based curriculum where students are taken through various chapters such as adjectives, tenses, prepositions, complex clauses, and the like, with an emphasis on generating correct forms rather than functional language. There are also no out-of-context example sentences to practise grammar in the abstract. Instead, grammatical structures are instantiated in real texts, and the process is based on enriching the given text with further similar examples that learners create by analogy.

Figure 1: Playing the English grammar game

In principle, this process can work without any curriculum. However, there is value in cross-checking what has and has not been covered. Established EFL (English as a Foreign Language) curricula and resources for English grammar can support the main process in the background. The peer tutors or facilitators who are in charge of the learning groups are then able to monitor and fine-tune how learners are progressing with respect to their knowledge of grammar. In addition, in testing the English grammar games with groups of learners we have found that it is useful to categorise the games according to their level of difficulty (Papen & Zeshan 2021). This is important so that learners can engage with materials at a level they are comfortable with and can experience a sense of progression through each higher level. When categorising games, it can be helpful to refer to established curricula and other grammar resources, although this categorisation also depends on the characteristics of the RLE text. As mentioned above, there is an interplay between flexible learning (based on the RLE texts) and structured learning (based on the progression from easier to more complex grammar in the texts).[3]

English grammar games may also interact with a predetermined grammar curriculum in cases where following such a curriculum is mandatory. This was the case in one of the learner groups in India that

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3 This implies some preparation by teachers ahead of English grammar game sessions, as learner-selected texts need to be sorted into levels and grammatical structures at the right level of difficulty need to be selected.

experimented with the grammar games, at a point when English had already been taught for six months according to a given curriculum. The teacher mapped structures that occurred in the games to the equivalent topics in the curriculum. Table 2 shows this mapping.

Table 2: Mapping grammar game structures onto a given curriculum

Structures from English grammar games[4]	Given English language curriculum
Letter: [DO]	verb
Lunch notice: [QUALITY]	adjective
Lunch notice: is	"is"
Water: [HOW MUCH]	how many / how much
Letter: to [PLACE]	prepositions of place, time and direction
Letter: will	"will"-future

Starting from the structures occurring in the grammar games, topics could be 'ticked off' in the given curriculum when they had occurred in the games. At times this was also an opportunity for the teacher to remind students of what they had already been taught in the previous semester.

Interestingly, the teacher reported that students did not have a problem with the terminology being different between the grammar games and their mandatory curriculum, i.e. using [DO] instead of verb or [QUALITY] instead of adjective. These differences are due to the fact that English grammar games work with semantic categories, i.e. classes of words based on meaning, instead of formal categories such as parts of speech (see Papen & Zeshan 2021).

From experimenting with the English grammar games so far, the research teams feels that the games have several benefits. Firstly, the game process starts with reading comprehension, and learners engage with grammar on the basis of reading. As many deaf learners may have little motivation for independent reading, given widespread negative experiences of language and literacy education, increasing the exposure to a range of authentic texts is very important. As learners are prompted to select their own texts, the games are responsive to their interests. Another benefit is that the same grammar structures and/or

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4 This column shows the titles of the grammar games and the structures occurring in each game.

their elements naturally re-appear across different games over time. Such spaced repetition in different contexts is an integral feature of the English grammar games.

In summary, the main design idea of English grammar games with respect to a curriculum is that a formal syllabus or resource, such as a grammar book for English or an EFL (English as a Foreign Language) curriculum, is used as a cross-reference from which structures that have occurred in RLE texts can be ticked off. There is no fixed series of grammar lessons that learners have to go through, although the categorisation of games into levels maintains an element of structured learning. Reading learner-selected authentic texts for comprehension is the starting point of English grammar games.

4 Reverse curriculum with cross-disciplinary learning journeys for children

While the English grammar games are limited to the domain of language and literacy, work with deaf primary school children expanded over time to include other knowledge domains that are traditionally thought of as different subjects. Examples of learning journeys across disciplines carried out with children at the Happy Hands School for the Deaf in Odisha are reported in Pal & Vishwakarma (2019), and in Zeshan et al. (forthcoming). One of these learning journeys was based on trees and included the following steps:

– EXCURSION: The class went outside the school building to look at and talk about trees.
– SCIENCE: The class experimented on what trees need to grow, planting saplings to learn about the role of sunlight.
– IT/DIGITAL LITERACY: Children searched pictures of different trees, other plants, and their parts on the internet, and created a table in Word to map words and pictures.
– ART: A colourful drawing on the topic of "What plants need" was created on the classroom wall.
– LITERACY (reading): The teacher presented a simple text in English about trees, and practised reading with the children, using the English text along with sign language.
– LITERACY (writing): Children practised writing some of the simpler sentences from the text. Again, the meaning was conveyed in sign language by the teacher.
– LITERACY (grammar): A grammar activity on prepositions as a game (following on from prepositions that appeared in the previous text):

the children picked up little cards with prepositions and practised expressions like "under the chair", "in the box", etc.

The different elements of this learning journey combine naturally into a storyline, which makes the learning experience much more meaningful and connected. In our research, we monitored the children's progress in multiple ways generated within the project (see Pal, this volume; Pal, Webster & Zeshan, this volume). There was no need for any external reference point, and no specific curriculum. However, we also recognised that schools in India usually do follow a set curriculum supported with standard textbooks, although there may be more flexibility at primary school level, particularly in the younger age groups. Nevertheless, theme-based learning as in the above example would be exceptional, perhaps used in 'project weeks' or similar one-off activities in some schools.

Reference to a standard curriculum is also a legitimate way to give school administrators and parents confidence in what is being taught and learned (see section 5 on accountability). To bridge the gap between flexible theme-based learning and a standard curriculum, a game design with a reverse curriculum approach can be helpful. In our research, we developed and discussed tools for such a game design. The game itself has not yet been implemented, so I describe the approach and the materials here, while the game's effectiveness remains to be tested.[5]

The centrepiece of the game is a circular game board, with an arrow fixed in the middle that can be made to point to different parts of the board, like the hand of a clock points to indicate the time. Around the rim of the circular board, we write the names of the subjects that we would like to cover. The first prototype included the subjects of literacy, numeracy, art and craft, sports and games, science, and environmental studies (see Figure 2). The centre of the game board has a space for the theme of the learning journey, which can be a written word/phrase, a drawing, or an object.

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[5] Implementation of the game was made impossible by the closure of schools in March 2020 due to the COVID-19 pandemic.
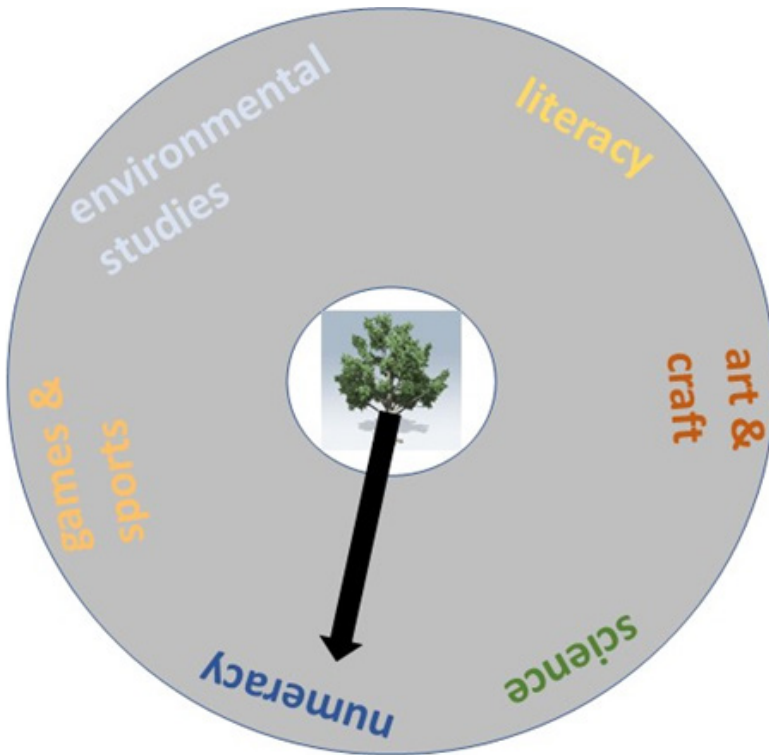
Figure 2: The game board

The basic idea of the 'learning journey' game is to start from a theme that is of interest to the children, be it that the teacher has observed this interest among the class, or that the children themselves have come up with the theme (see Webster & McEwan, this volume, on the selection of content for learning in groups led by peer tutors). In the above example, this would be the theme of 'trees'. After the theme is noted in the centre of the board, each round of the game consists of spinning the arrow to select one of the subjects. This selection introduces an element of chance, which is one of the characteristics of gamification.[6] According to the selection, the class undertakes a learning activity that links the theme with the subject, as exemplified in the learning journey about 'trees' above.

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6 Teachers may want to select which subjects come up in the game and set the arrow to its next position, so that they can pre-plan activities and make sure all subjects are covered to some extent. For the learners, there will still be an experience of surprise and novelty associated with subject selection. Teachers who have experience with the game may be able to select the subjects randomly by spinning the arrow.

When the learning activity is completed, the class can return to the game board and spin the arrow again to connect the theme to a new subject. A game round may involve several subjects, although the initial link is between one particular theme and one particular subject. For example, if children are experimenting with mixing colours in a science activity, this may well also involve numeracy, e.g. measuring liquid paints in ml. Learning about the eye may also involve literacy, if some reading and labelling of eye drawings is involved. This mixing of subjects is a normal and important feature of the game. To introduce additional game features, children could collect reward tokens after covering a theme, or points for linking themes to subjects could be collected and displayed in class.

In order to link learning activities to a standard school curriculum, we developed a format which makes it easy to tick off topics from the given curriculum. An example of this format is shown in Table 3. The topics are derived from a primary school mathematics textbook. This can be done easily by converting the table of contents from the textbook into an Excel table. Topics on the right side are more advanced than those on the left.

Table 3: Listing subject concepts for cross-checking (grade 1/2 mathematics)

Themes	Key Concept	Key Concept	Key Concept	Key Concept	Key Concept
Numbers	Numbers and numerals from 1 to 20	Introduction to zero through subtraction method	Counting objects from 1 to 99 via groups of tens and ones.	Representing a number in groups of tens and ones.	Numerals and numbers up to 99, and their comparison
Number Operations	Addition and subtraction up to 20 (in steps-first up to 9 / less than 10 and then up to 20).	Addition and subtraction of numbers within 99 without regrouping	Addition / subtraction problems presented through pictures and verbal descriptions		

Table 3: continued

Themes	Key Concept	Key Concept	Key Concept	Key Concept	Key Concept
Geometry	2D shapes - rectangle, square, triangle, circle, line etc.	2-D shapes as outlines of the surfaces of 3-D shapes on paper/or flat surface	Basic 3D shapes like cuboid, cylinder, cone, sphere, by their properties and names	Sorting, classification and description of shapes via their observable properties	
Measurement	Length	Weight	Volume	Time	
Data Handling	Collection, representation, interpretation of simple visually presented information				
Patterns	Simple patterns in shapes and numbers in the surroundings: observation and extension.	Patterns from daily life experiences.			

Although we were not able to test this tool, the design idea is that this format should be useful for teachers. Firstly, they can make sure that there are no major gaps. For instance, within mathematics at primary school level, it would not be right to never come across concepts such as measurements or multiplication. Secondly, the Excel file also gives a sense of a progression path to follow in an easily accessible form because teachers can see at a glance which topics are more advanced and which

are more basic. When developing learning activities with the children, teachers can then take care that topics are only selected if the concepts that they build on have already been covered earlier. In this way, learners are less likely to be confronted with materials that are too advanced for their understanding.

In parallel with the English grammar games, theme-based learning with primary school children does not per se need to refer to a given curriculum, or even to named subjects. However, it is valuable to do so in order to monitor what has been covered and achieve a balance of activities across different domains. The reverse curriculum design means that an existing curriculum serves as a post-hoc cross-reference to the main activity, which is flexible theme-based learning. The curriculum is a secondary linkage rather than the starting point for a fixed series of lessons to be covered.

5   Motivations for the game designs

Working with a reverse curriculum game design is different from traditional teaching methods in multiple ways. Perhaps most importantly, there are opportunities for making the learning experience collaborative, flexible, and meaningful. For instance, in the learning journeys game the subjects that are included in the game are selected by the teachers and can be changed any time, which is quite different from following a set curriculum. There is no fixed rule as to how many sessions need to be associated with each theme, and neither is it necessary to cover all subject areas for each theme. Obviously, some themes connect with certain subject areas more naturally than with others. For example, objects or pictures from the natural world will connect readily with physical sciences and with arts and crafts (e.g. in the sense of drawings or sculptures showing plants or animals), but a connection with sports/games is less obvious. However, making less obvious connections is good for lateral thinking, generating interesting discussions in class. The English grammar games are more circumscribed as to the target structures being studied within each game and within each level, but which games are played and when is up to the learners and tutors.

Another consequence of the game design is the way in which content is repeated. For instance, each time a grammatical term comes up in the English grammar games, it appears embedded in a different context. Over time, this modified repetition is apt to consolidate the learners' knowledge of grammar (see Papen & Zeshan 2021 for further details). In the learning journeys game, similar content may likewise be covered several times

across different games. For example, percentages could come up in an activity on mixing colours (e.g. 50% blue and 50% red vs. 70% blue and 30% red), and then again as part of a topic on ingredients in food (% of sugar, fat, etc.). With respect to such patterns of repetition in learning, the learning journeys game and the English grammar game use the same design features.

In the context of our research, an important consideration is the unavailability of trained teachers in India who are able to use sign language fluently in the classroom. Hence in the experiments described in the previous sections, we did not work with formally trained teachers to organise the learning activities. Because of the way that teacher training in special education is organised in India (see Akanlig-Pare et al. 2021), trained teachers with sign language skills are very rare. One result of this setting is that the interventions we developed, including the reverse curriculum games, were geared towards being implemented with informally trained peer tutors.

Involving tutors without formal training in reverse curriculum-type games is possible because learning is structured in a way that is more easily accessible to both tutors and learners. However, it should be recognised that there is a very different skills set needed in order to be a learning facilitator in such settings. Besides the necessary bilingual capabilities in sign language and literacy, flexibility and creativity are more important than exact or in-depth curriculum and content knowledge. In fact, students and tutors can often learn together, with the tutors just a few steps ahead of the students. However, teachers who are trained in a traditional manner may well struggle with implementing the games because the process of learner-centred interactions supported by the games requires a teacher role that is quite removed from the traditional one.

A related motivation for using a reverse curriculum logic is that it becomes possible to embed useful resources, such as school textbooks or English grammar resources, in a way that is less daunting for the peer tutors. Rather than having to be fully competent in the use of these resources, peer tutors can harness them in a supporting and non-threatening manner. This is precisely because the curriculum or syllabus comes in at the end as an additional checkpoint rather than being the main reference point upon which an entire sequence of lesson planning, teaching and assessment depends. This is quite a different psychology not only for learners, but also for the peer tutors, which has been important in our work.

From the point of view of educational institutions, the motivation for a reverse curriculum approach is that it maintains an element of accountability (cf. The Impact Initiative 2020). School management as well as parents or funders may rightly seek some justification as to what is being taught and learned (see Waller, Jones & Webster, this volume). Bringing in a secondary link with curricula introduces such an element of accountability, as those parts of a syllabus that have come up in the games can be marked as having been covered. This also allows for credibility and recognition of the learning programme as something that is equivalent to standard curricula that are widely recognised and carry a reputational gain. Over time, curriculum content can be covered in parallel with what would have happened in traditional teaching, but the learning context is very different, allowing for more creativity and meaningful storylines.

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Appendix: English grammar game example

Preparation Step 1: Select an RLE text
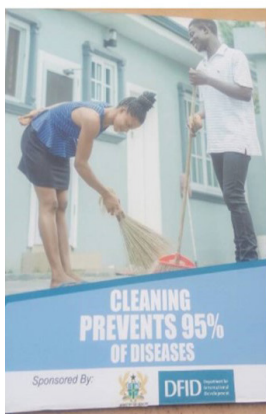
Preparation Step 2: Select grammar structures with examples from the RLE text

Abstract grammar structures	Examples in the RLE text
[DO] with _____	wash with soap
[NUMBER] % of _____s	95% of diseases
[THING]s and [THING]s	fruits and vegetables
[DO] your [BODY PART]	wash your hands
under [THING]	under water

Preparation Step 3: Fold a paper and write the grammar structure and the example from the RLE text on the outside of both sides

[NUMBER] % of _____ s

95% of diseases

Preparation Step 4: Write more examples of the same grammar structure on the inside of the folded paper
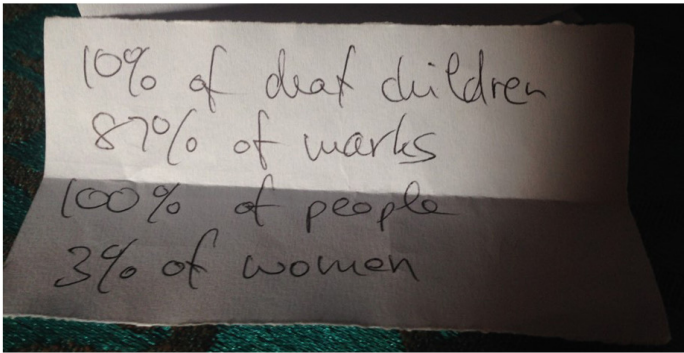
Game Step 1: Sit in a circle, bring up the RLE text on the laptop and place the papers in a circle, with a pen in the middle:

The grammar structure must be face up!
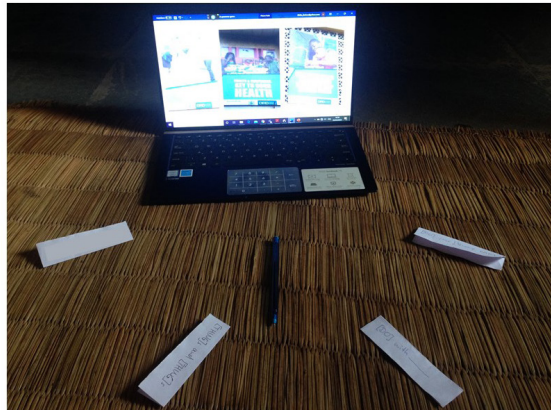
Game Step 2: The first player spins the pen, and picks up the paper where the pen points:
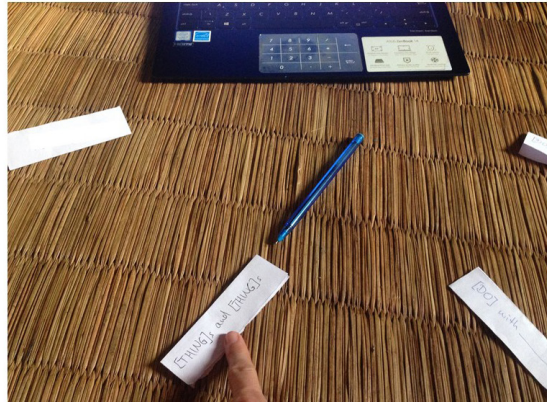
Game Step 3: Find the example of the grammar structure in the RLE text:
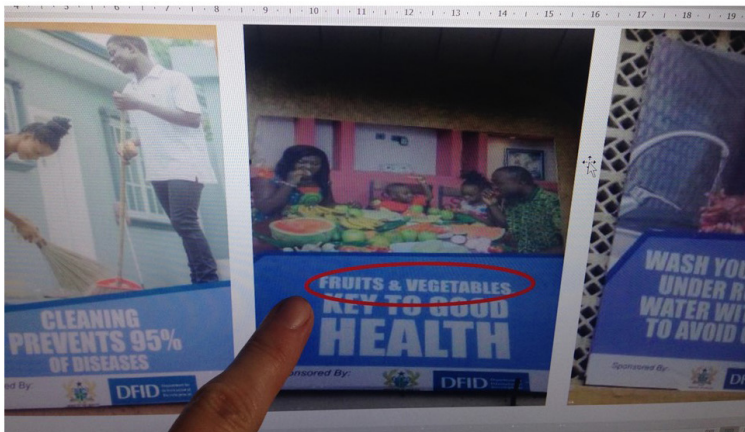
Game Step 4: Turn over the paper to check if you have found the right example:

Thumb up: correct! You have found the right example

Game Step 5: Now everyone in your group writes down similar examples of the same structure. When all have finished, open the folded paper to compare your examples with the examples written on the inside of the paper:

Compare your examples with these examples. Did you understand the grammar structure correctly?
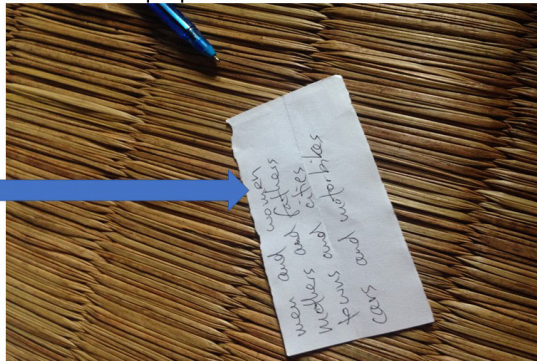
Qualitative data from learner portfolios

Nirav Pal

This chapter looks at the portfolios produced by deaf children aged 6-11 during classes at Happy Hands School for the Deaf (HHSD) at Sindurpur in Sonepur District, Odisha, India. HHSD, which was established by the Rural Lifeline Trust in 2016, aims to provide deaf children with education and accessible communication through Indian Sign Language. The children's portfolios were used to track their development of various skills over a two-year period during the Peer-to-Peer Deaf Multiliteracies study (see Webster & Zeshan, this volume). In order to examine the development of learners' skills in specific areas, this chapter explores eight of the portfolios by presenting four case studies each from two learner groups.[1]

Each case study explains how the learner changed and developed over the two-year period of the research. It includes descriptions of the content that they were learning about, and pictures of the activities that they did. The materials in this chapter are taken from the raw qualitative data (dates, activities, topics and comments relating to each portfolio). UK-based researchers worked with in-country research assistants to develop these monthly portfolio assessments.

Creating the portfolios was the responsibility of the teachers working in our project. They collected materials on the learners' activities and progress continuously, and selected the most illustrative of these materials for inclusion in the portfolios. That is, the materials going into portfolios were not determined in advance according to a fixed schedule of activities. Instead, teachers identified when important learning was taking place and documented these activities, most commonly in the form of photos or video recordings. Selected materials were compiled into multimedia portfolios for each learner on a monthly basis.

The use of portfolio assessments (Kim & Yazdian 2014) to track learners' development of multiliteracies skills is especially suitable for assessing deaf children because it allows the teacher to monitor their small increments of progress (Pizzo & Chilvers 2019) and because video technology provides an increasing scope for compiling visual language

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1 For a more extensive description of HHSD, including the two groups of learners (the 2016 cohort and the 2018 cohort), see Pal, Webster and Zeshan, this volume. With some minor exceptions, children in Group A (the 2016 cohort) are older and have been at the school longer than children in Group B (the 2018 cohort).

samples (Guardino & Cannon 2016). The portfolio assessment technique was intended as a flexible tool for adding qualitative data to the collection of data from pre- and post-tests (see Pal, Webster & Zeshan, this volume, for details on the pre-test and the two post-tests that were conducted with the children). It also helped the students reflect on their learning and made lesson planning easier for the deaf peer tutors, as argued in section 3 below. The portfolio method supported the team's priority of nurturing the co-creative process of learning, rather than establishing individually testable outcomes (cf. Zeshan et al., forthcoming).

Each case study for this chapter was selected in order to focus on a particular area of progress. Although the aim is to highlight a particular skill area with each case study, it is clear that sometimes other skills are also involved that underpin progress in that area. For example, reading skills may be closely associated with skills in sign language because the understanding of a text and its content is common to both. Likewise, writing skills usually follow and are related to the development of reading skills. In the description of case studies, the focus on one skill area means that we prioritise looking at this area, especially in relation to the children's work shown in the pictures, and where other skills are also involved, this is noted in the text.

The case studies begin with four learners from Group A being discussed, including one who developed his reading abilities (1.1), one who progressed in writing (1.2), one who made gains in the area of sign language (1.3), and one who saw an increase in his technical skills and scientific knowledge (1.4). The next section contains case studies of learners from Group B, who advanced their capabilities in reading and writing (2.1), creative art (2.2), maths (2.3), and sign language (2.4). Section 3 provides an overall discussion of the learners' progress and the efficacy of the portfolio method, and offers some conclusions.

1 Case studies from Group A: Reading, writing, sign language, and technical skills

The four case studies presented in this section focus on the portfolios of Amit (m), Chandan (m), Reenarani (f) and Mantosh (m), which were chosen from among the portfolios produced by the 12 learners in Group A because they illustrate progress in particular skill areas. This section begins by exploring Amit's progress in reading, and then moves on to look at Chandan's progress in writing, Reenarani's in sign language, and Mantosh's in technical skills related to the understanding of electricity.

1.1 Reading: Amit

Amit's case study provides an example of a deaf learners' development of reading abilities while attending lessons taught by deaf peer tutors using the Deaf Multiliteracies approach. He joined the school in July 2016, at the age of 7. He did not know any sign language at that point, and his family at home did not sign. Although his case study focuses on reading, the steps he took also clearly show how this ability proceeds alongside the development of his skills in Indian Sign Language (ISL).

After joining the school in 2016, Amit took at least six months to progress from an interest in reading to the recognition of English words. His teachers noticed that he loved books and was motivated to improve his reading skills so he could have access to new books. Initially he did not understand the difference between ISL word order and English word order. However, by September 2019 he could use natural ISL order alongside reading simple short texts or sentences with visual pictures. The teachers guided the students in practising natural ISL order instead of following English order while reading. Increasing awareness of the differences between ISL and English is part of Amit's learning journey.

This case study uses Amit's portfolio to track his progress in reading over 17 months beginning in November 2018, by which time he had acquired sufficient sign language skills to enable him to participate fully in the classroom activities.

Figure 1.1.1: In November 2018, Amit read sentences on the whiteboard and explained each of them to his classmates in ISL, without using English sentence order.

Figure 1.1.2: By January 2019, he was able to attempt a presentation to his classmates on several English function words that were written on the whiteboard: *this, that, is, a,* and *an.* This was partly successful: he could explain *this* and *that,* but did not know how to convey the functions of *is, a,* and *an.*
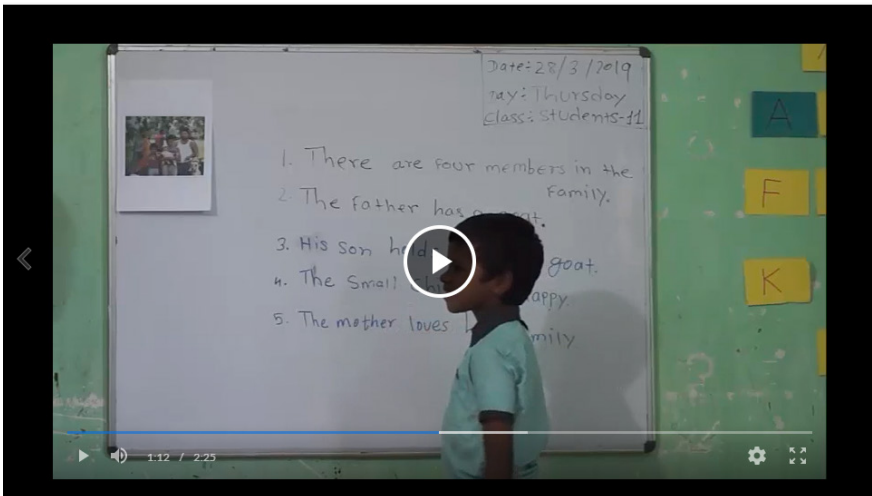
Figure 1.1.3: In April 2019, at the first post-test, Amit was able to read the text and sign some of the five sentences written on the whiteboard, which were about a family and their goats, even though he rarely read multiple sentences prior to that.

Figure 1.1.4: He could not read all of the sentences but knew at least some of the words in each sentence. The teacher referred to a picture of the family that was next to the sentences and asked him to identify a particular member (e.g. *the son who holds a small goat*), and he pointed at the correct individual in the picture. A few months later, in July 2019, he signed with a classmate in a pair-based activity where they drew pictures on poster paper, and the teacher wrote sentences under them, and then the students read the sentences and presented them in ISL. Even though the sentences included English prepositions (e.g. *This is a mirror next to a tree*), he was able to read them and explain them in ISL, without using the English sentence order or function words (e.g. *is, this*). He kept his signing relevant to the meaning of the sentence without resorting to a word-by-word transliteration, which suggested that he had the ability to read and understand the content.

Figure 1.1.5: He built on this skill across the subsequent months, and by the end of November 2019, he gave a presentation to the class by reading text displayed on the computer screen and signing the story in ISL. This activity was done by students in both groups, and Amit's performance was one of the best because although he stumbled over some words that were new to him, he was able to read and sign the most sentences.

Figure 1.1.6: Finally, at his second post-test in March 2020, he read and signed a text about zoo animals for the teacher, without hesitation. The teacher then asked some follow-up questions, which he answered correctly. This showed a definite improvement compared to his first post-test.

1.2 Writing: Chandan

Progress in the area of writing is highlighted here through the portfolio produced by Chandan. Like Amit, Chandan was 7 when he began classes at HHSD in July 2016, and did not know ISL at that time as he had no access to sign language at home. However, he had previously attended a mainstream (hearing) school.

Chandan developed a number of multiliteracies skills whilst at HHSD, including drawing, craft-making, creative play, and sign language, but this case study looks at the increase in his writing skills over a period of 16 months, starting in August 2018. The writing activities recorded in the portfolios are often accompanied by signing the equivalents in ISL.
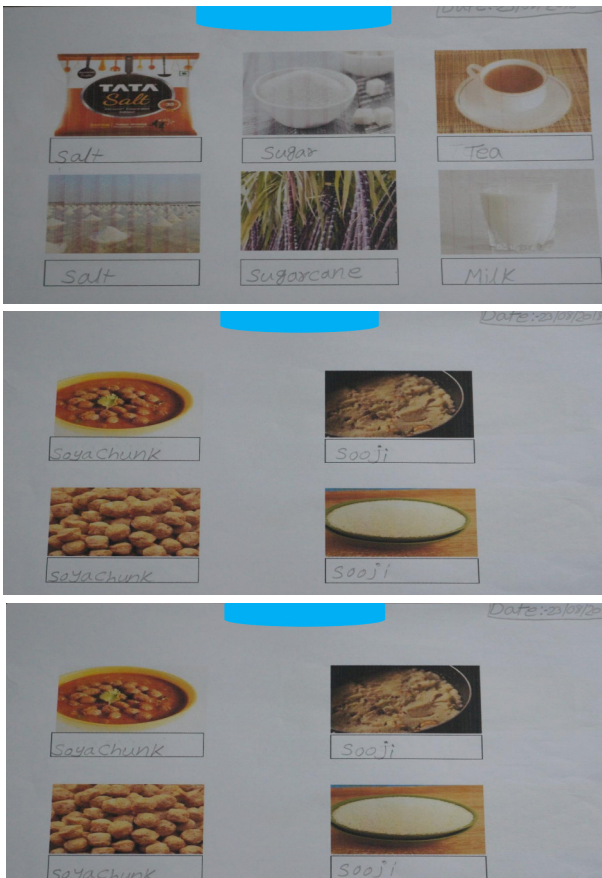
Figure 1.2.1: In August 2018, in a lesson on grocery items such as *sugar* and *chickpeas*, Chandan wrote words for 22 of the items underneath the corresponding pictures. He was able to write both capital and lowercase letters, and articulate signs for the items.
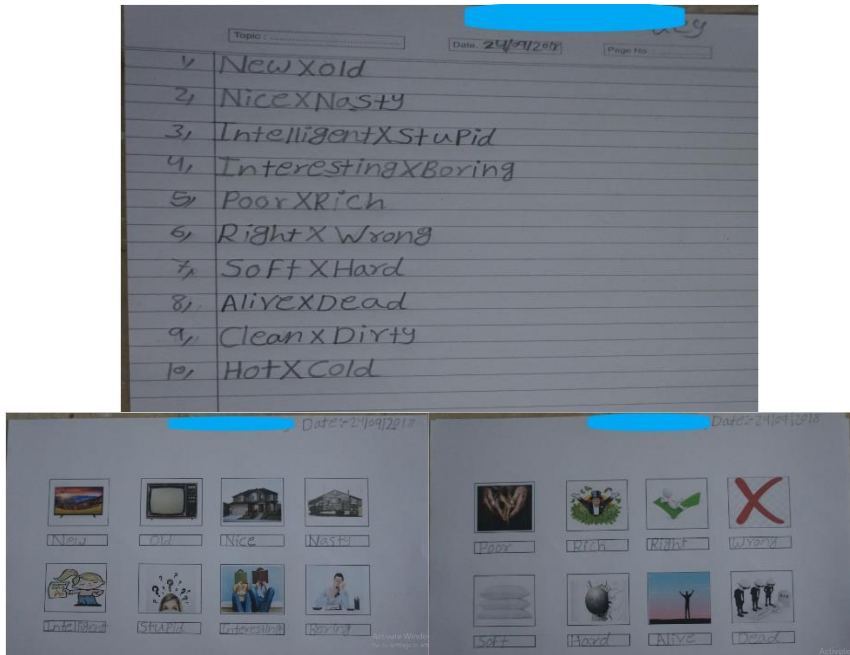
Figure 1.2.2: In September 2018, he matched a number of words to their opposites (e.g. *new* and *old*), identifying and writing them all correctly. He was also able to sign each word.
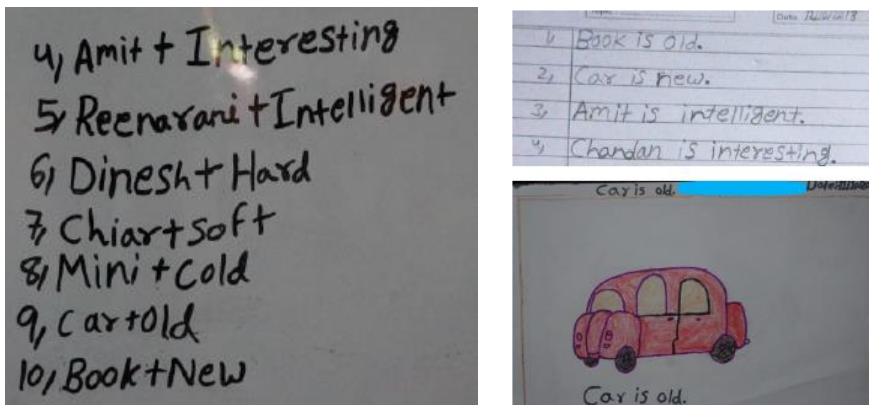
Figure 1.2.3: He started to write short sentences for the first time during the following month, demonstrating his understanding that every sentence ends with full stop and has both capital and lowercase letters.
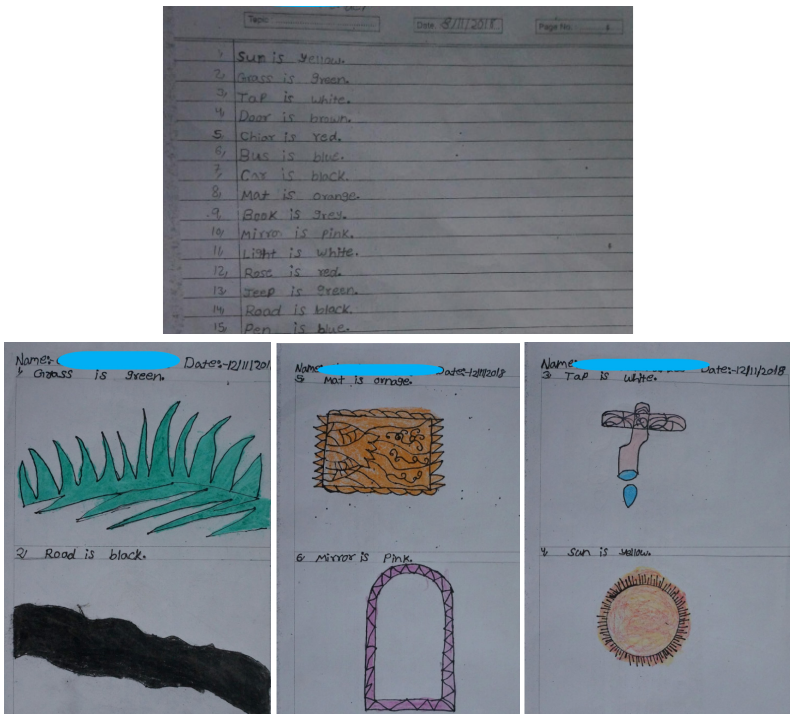
Figure 1.2.4: Then, in November 2018, he improved his sentence-writing further by learning how to use the words *that* and *this*, and connecting singular nouns to *is* and plural nouns to *are.*
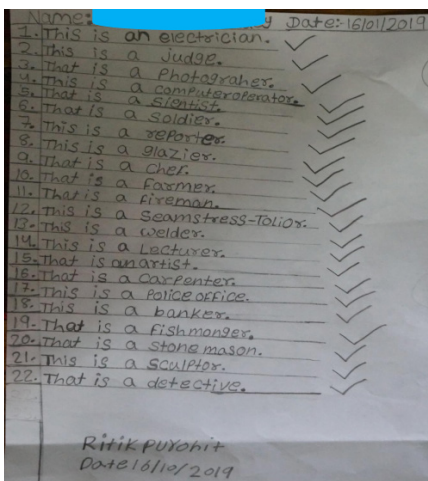
Figure 1.2.5: By January 2019, he had expanded his writing skills to include the articles *a* and *an*, as well as words for occupations such as *housekeeper* and *doctor.*

1. He is bijaya walk.
2. I am dharmendra fly.
3. It is mini toy.
4. You are manthosh play.
5. We are reenarani ant.
6. They are dinesh cook.
7. She is ritik car.
8. You are lipi top.
9. They are Chandan Carrom.
10. We are laymi pay.
11. He is amit sit
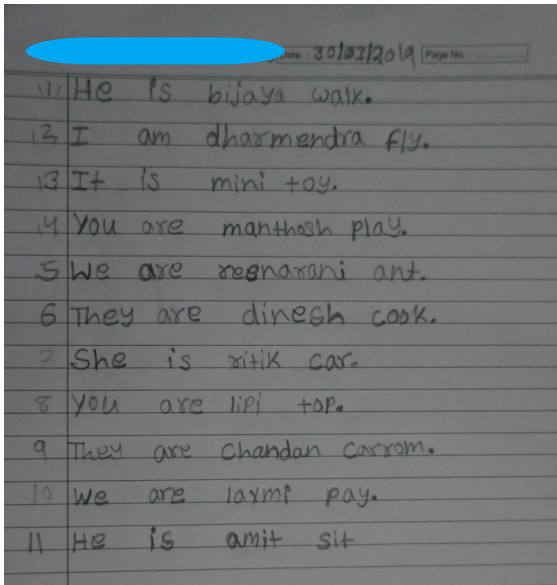
Figure 1.2.6: Three months later, even though he was confused over the difference between verbs and nouns and mixed up the order of these components, he understood how to use the copular verbs *is/are/am* and the pronouns *they/we/he/she/I.*

Figure 1.2.7: By July 2019, his knowledge of nouns and verbs had improved, and he was able to write sentences in cooperation with his classmates in Group A, as well as by himself. He wrote sentences beginning with question words and prepositions, and could sign all of them.

Figure 1.2.8: Two months later, in September 2019, Chandan performed well in a game activity where the children searched through a pile of plastic letters to find the ones they needed to spell out a particular word.
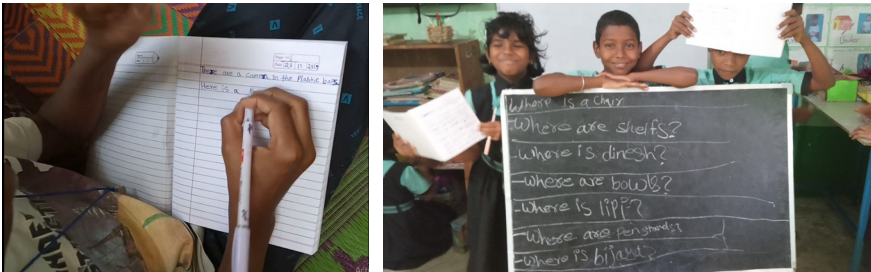
Figure: 1.2.9: This seemed to be experienced by the children as an exciting way of practising their knowledge of new words, which contributed toward their ability to write words on paper. During the following month, Chandan was able to write the answers to questions that his classmate wrote on the blackboard, e.g. *Where is a television? Here is a television.*

Figure 1.2.10: Finally, in November 2019, he proved to be one of the most successful players of a game that aimed to facilitate the learning of prepositions such as *next to*, *in front of*, and *behind*. This activity helped the students understand what each preposition meant, and afterward they were able to write simple sentences using these words and phrases. It was also a great challenge for the students and they competed with each other enthusiastically. Their motivation to win helped them to learn the meanings of prepositions as a side effect of an engrossing activity, and Chandan was a top performer.

1.3 Sign language: Reenarani

In contrast to Chandan and Amit, 8-year-old Reenarani already knew some sign language before she began attending classes at HHSD in August 2017, as she had learned ISL from her Deaf parents. She had previously been a student at four other schools, including both mainstream and specialist institutions. Because of her strong foundational skills in sign language, she was often the leader of activities and games, and enjoyed teaching and delivering presentations to her peers. This case study reveals how her high level of engagement in the classroom led to substantial increases in her ISL ability over a period of 15 months, starting in August 2018.

Figure 1.3.1: In her first portfolio sample, which was produced after the class had learned about different food items, she presented the signs for each item, including matching the cooked items, e.g. *bread*, to their raw ingredients, e.g. *grain.*

Figure 1.3.2: A month later, in September, she successfully explained in ISL how to weigh and price food items, but could not identify the difference between *gram* and *kilogram.*
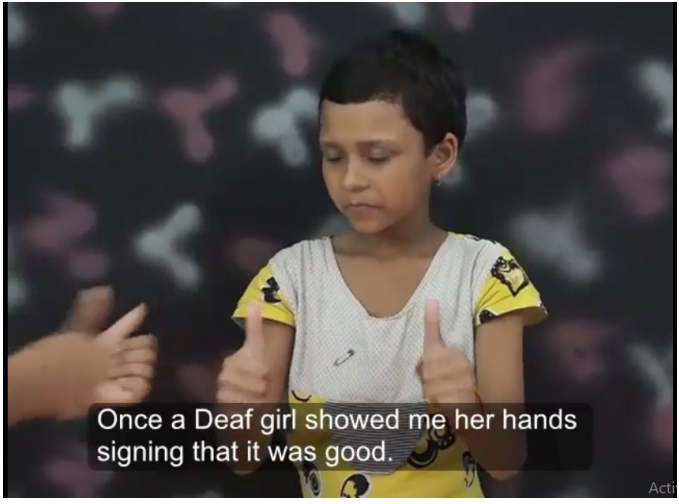
Figure 1.3.3: By the end of September, Reenarani was among 10 pupils selected to work with the teacher to create an awareness-raising video for India's International Day of Sign Language. In the middle of the video, she delivered an emotional and poetic comparison of her experiences attending mainstream school versus Deaf school. The video was viewed, liked and shared by many people on social media.

Figure 1.3.4: Reenarani's next portfolio sample is from October 2018, after a two-week lesson on clock time. She was able to sign an explanation of why clocks are used and where they can be purchased.

Figure 1.3.5: Two months later, the teacher asked each student to tell a story using units of time, including days, months and years. Reenarani told her story well, apart from still being unclear on how to sign dates, as she had only recently learned date format for the first time.

Figure 1.3.6: In January 2019, she was able to explain to her classmates the meaning and examples of the concept of 'lecture'.

Figure 1.3.7: In the middle of July 2019, she explained the concepts of day and night to her classmates in sign language, using a ball and a torch to demonstrate the relationship between the Sun and Earth. The teacher had not yet given a lesson on the solar system; she had acquired this knowledge from her mother. The other learners found her explanation engaging and it inspired their interest in the solar system.

Figure 1.3.8: Then, at the end of August 2019, she worked with her peers to create a house from craft materials. In her portfolio sample she identified the various parts of the house and garden and described how they were made, in sign language. Her classmates asked her questions about the house and she was able to answer most of them, and exchange ideas and suggestions.

Figure 1.3.9: During the next month, she chose the topic of panda bears from a book and asked the teacher to explain it to her so that she could give a 12-minute presentation to all of her classmates in the hall. She was able to tell them a number of facts about pandas including where they live and what and how much they eat, in a way that engaged her audience.

Figure 1.3.10: Finally, in October 2019, the students had a lesson on trees and split into two groups to discuss how plants eat, drink, and breathe. Reenarani presented an explanation of the topic clearly and confidently to her classmates.

1.4 Science: Mantosh

Mantosh has a Deaf sister so he knew how to gesture before coming to HHSD in July 2016, at which point he was 7 years old. He had attended a hearing school previously, and was interested in electricity and other science topics and enjoyed giving practical demonstrations to his classmates. His knowledge in this area increased over a period of two years, from being unsure of how to answer questions about electricity, to being able to successfully connect a working fan, switch and battery, and discuss this confidently with the teacher.

Figure 1.4.1: In 2017 the head teacher discussed with the children how a solar-powered fan works and asked them how it might receive power without a switch. At this point, Mantosh did not know the answer.

Figure 1.4.2: However, by July 2019, his understanding had developed to the point where he was able to connect a battery to a light and knew that a larger battery would provide power for longer than a small one.

Figure 1.4.3: During that month he also gave a demonstration to his classmates in the hall of how a bottle containing rice can be lifted without touching the bottle itself, using a stick inserted in the top. He had learned this from a YouTube video that the teacher showed to the class. His peers were impressed that he was able to perform and explain the experiment himself.

Figure 1.4.4: In the following month, Chandan and Mantosh lectured the group on how to connect batteries to things. Most of the students in Group A were interested in DIY and the workings of electrical items such as fans and lights, but in June 2019 Mantosh and Chandan had started to make DIY electrics more than their classmates. Therefore, by August they had gained a considerable amount of skill in this area and the teacher asked them to demonstrate to their peers how to make DIY electrics and connect batteries.

Figure 1.4.5: Mantosh was able to make lights and fans work by himself, and showed great interest in doing this independently without any help from his teachers.

Figure 1.4.6: Finally, in September 2019, after the teacher showed the students how to make a DIY light, Mantosh created a complex apparatus with three fans, three switches and a battery on a box. The teacher asked him questions about his project, and he discussed how the fans, switches and battery were connected, why they could not work with wire, and what other ambitious projects he wanted to work on.

2 Case studies from Group B: Reading and writing, creative art, maths, and sign language

The focus of this section is the progress of four students from Group B, which had 10 learners in total. The portfolio samples produced by Shakit (m), Archana (f), Hurshikesh (m), and Deepak (m) exemplify development in reading and writing, creative art, maths, and sign language, over a period of two years.

2.1 Reading and writing: Shakit

Shakit did not know any sign language before starting classes at HHSD in July 2018. He was just 6 years old and had no access to ISL at home, and no prior experience of formal education. He was a fast learner, and his portfolio samples show strong development in writing and reading in the space of 17 months.

In this portfolio, reading and writing is at the level of individual words, as literacy skills have not yet progressed to the level of sentences. In many of the activities, fingerspelling plays an important role because fingerspelling links sign language and written language (Ahereza 2021).

Figure 2.1.1: When he first joined the school and did the pre-test, he was unable to match words to objects, and could not fingerspell. During the summer of 2018, he learned to match picture cards to word cards, and identify basic words including colour terms. His portfolio sample from August 2018 shows that he could read a body part term such as *eye* and then fingerspell it for his classmate.
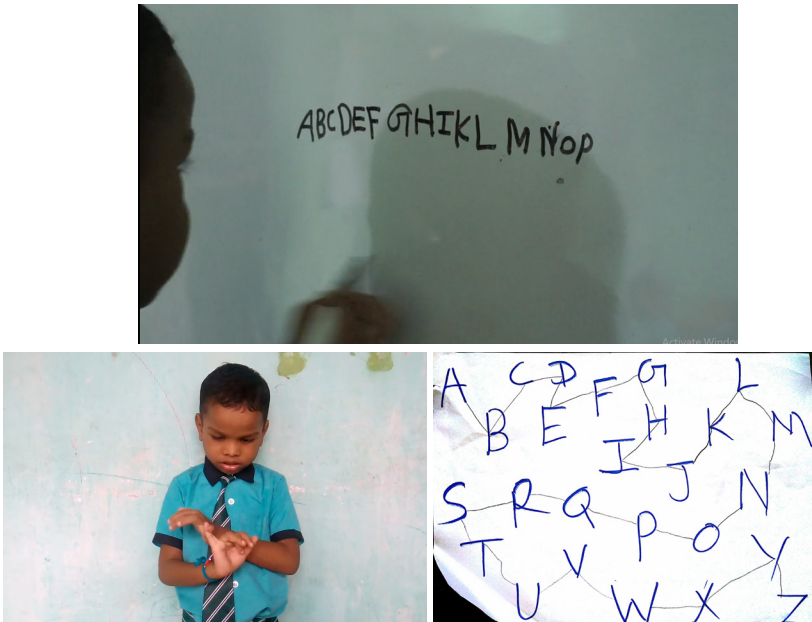
Figure 2.1.2: His portfolio samples from mid-September 2018 reveal that he was able to fingerspell and write the alphabet, and learned from a classmate how to fingerspell short words such as A-P-P-L-E. This seemed tiring for him at first, but over the next several weeks, he became more competent at it, more interested in the learning activities, and able to pay attention for longer periods of time.

Figure 2.1.3: As a result, his knowledge advanced to the point that at the beginning of the lesson he could fingerspell some words on his own.

Figure 2.1.4: In February 2019, Shakit performed enthusiastically and skillfully during a game played by three pupils, where one fingerspelled one of several words posted on the wall, and the other two students competed to be the quickest to point to the word that he was spelling. The teacher was impressed that despite Shakit being younger and having less learning experience than his peer, by the final round he had the best score.

Figure 2.1.5: By March, he had made a substantial improvement as shown by the results of his first post-test in which he successfully identified colour words.

Figure 2.1.6: Several months later, towards the end of 2019, he could write lowercase letters and match them to their uppercase counterparts. He could also identify and write words for objects.

2.2 Art: Archana

Six-year-old Archana knew some sign language before joining HHSD in summer 2018, because of her Deaf parents. A quick and intelligent pupil, she made notable progress in her artistic skills over time.

In this portfolio, it is interesting to observe how skills in art go hand in hand with cognitive skills related to imagination and storytelling. As the artwork becomes more complex, the communication about its meaning becomes more complex and varied too. This concerns both the contexts where she discusses her artwork (with the teacher, presenting to a group of peers, while engaged in group work) and the content of these discussions, in particular Archana's increasing skills with elements of storytelling such as different characters in a scene.
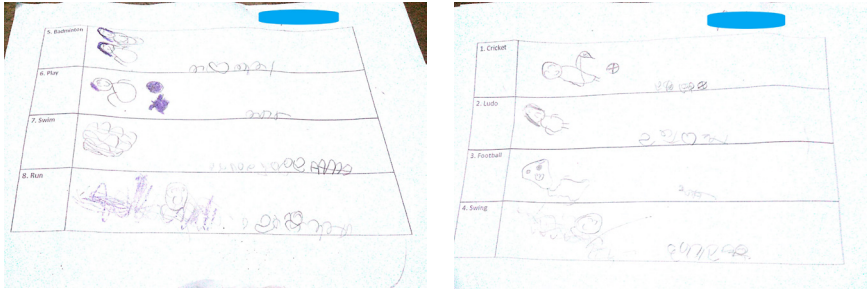
Figure 2.2.1: During the pre-test in July 2018, Archana began showing her creativity by drawing objects alongside written words listed in a table, e.g. *football*. A week later, when she started classes, she drew figures of people doing various actions, e.g. swimming, unaccompanied by any objects or background.

Figure 2.2.2: Her penmanship and creative abilities increased further by November 2018, when she produced abstract drawings of geometric lines as well as pictures of objects (e.g. egg, kite, ink) and a coloured landscape including a tree, house, hill, and river. To help her and the other learners improve their drawing skills, the teacher produced some examples of more detailed pictures that included multiple objects. By learning from the teacher and her peers, Archana's artwork became richer and more complex.

Figure 2.2.3: The following month, she used her new colouring skills to create an image of a butterfly, which she copied from a small picture that the teacher had provided in order to support the children's incipient dexterity with crayons.

Figure 2.2.4: In January 2019, she coloured in a picture of a train, and the teacher discussed with her personally what a train was and told her a story related to trains. She could then explain the concept and tell the story herself.

Figure 2.2.5: A month later, she created a fish from craft materials by following a model that the teacher produced, and made a picture of a lion with support from the teacher. She obtained more practice with craft materials when she worked with several other students to make a house, garden, and road. This showcased their imagination and skills in drawing, writing, craft-making, and conversation, because they were able to discuss the house with their teacher.

Figure 2.2.6: Archana also talked with the teacher about her landscape drawing and another picture that she and two peers created of a city with a hospital, garden and people. She was able to describe her pictures and tell stories about them, and in the group work she actively contributed her imagination and experiences to the creative output. Thus, her artistic skills had advanced from simple pencil drawings of one item or figure, to complex coloured landscapes with multiple subjects and details that she could narrate reflectively.

2.3 Maths: Hurshikesh

Hurshikesh started attending HHSD at around the same time as Archana. He was 9 years old and did not know any sign language, as nobody in his family signed. He had experience studying at a hearing school and was interested in practical learning activities. This case study looks at his development of maths skills over a period of 12 months.

The activities and outputs in this portfolio include both writing numerals and signing numerals in ISL, as well as other types of activities that involve neither writing nor signing (e.g. drawing, physical games).

Figure 2.3.1: The portfolio starts in December 2018, when the students were asked to count ice-lolly sticks from 1 to 20. Most of them were not able to identify numerals or articulate numbers in sign language at that point.
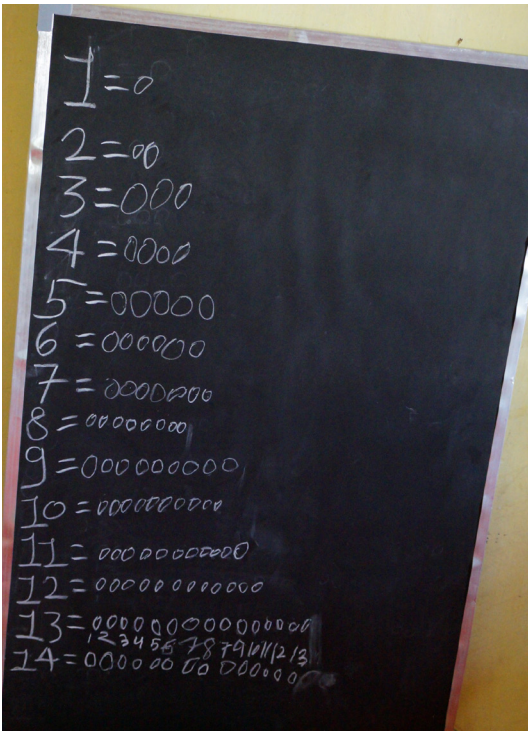
Figure 2.3.2: Later that month, Hurshikesh practised counting circles while writing them on the blackboard in order to learn numbers 1 to 14. He was engaged in the task and did not have any difficulty in paying attention.

Figure 2.3.3: In January 2019, he performed well in an activity where students stepped onto numbers drawn in chalk on the ground. This proved to be a stimulating way for Hurshikesh to practise identifying numerals from 1 to 20.

Figure 2.3.4: He also practised drawing and counting lines on paper in order to identify numbers from 1 to 40. In another exercise, his task was to count items on a worksheet and circle the number of items in each instance. The worksheet shows a mix of correct and incorrect answers.

Figure 2.3.5: The following month, he competed with another student to read numeral signs from 1 to 40, and won the game by quickly identifying the most numbers.

Figure 2.3.6: He was also seen signing numbers from 1 to 20 in the correct order as he counted the squats done by another student.
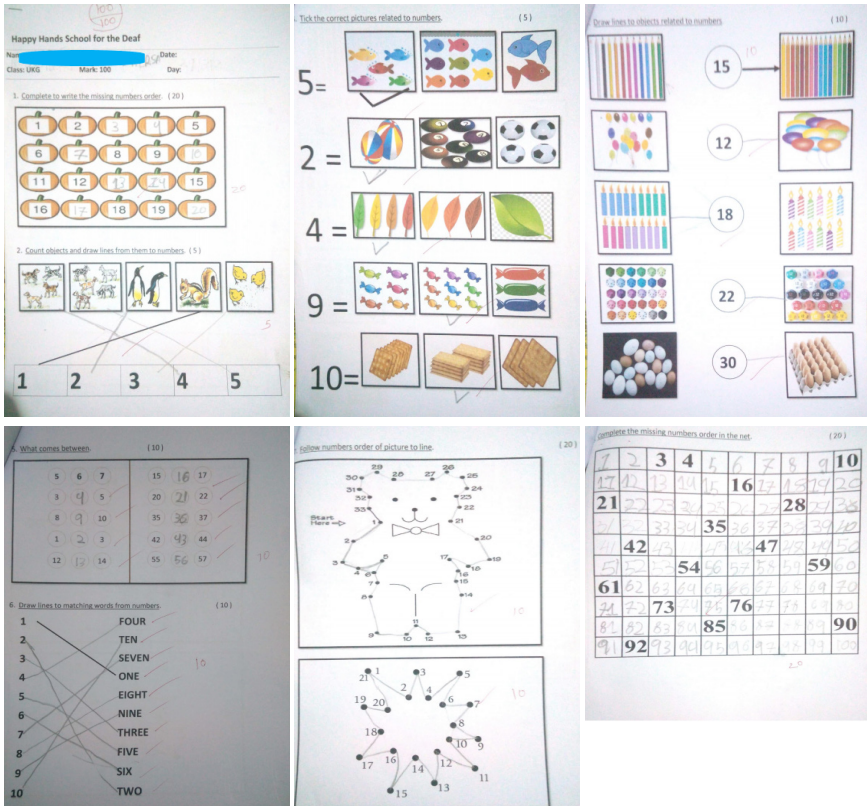
Figure 2.3.7: By April 2019, Hurshikesh could complete exercises that involved writing numerals from 1 to 100.
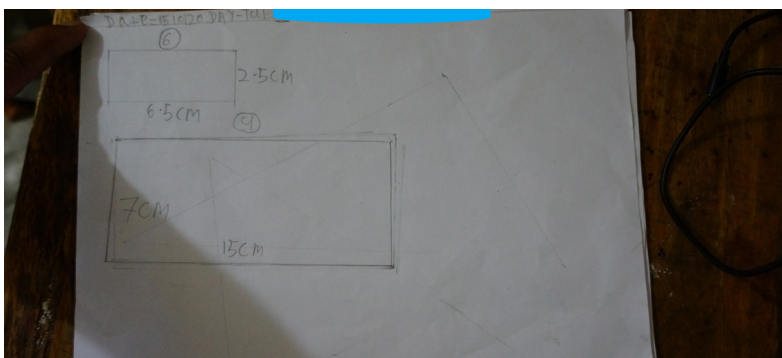
Figure 2.3.8: Three months later, he was able to use a ruler to make and record measurements in centimetres, and he exploited this skill when making a house out of craft materials. Finally, by November 2019 he had learned how to do addition, taking his maths skills to the entirely new level of performing calculations.

2.4 Sign language: Deepak

Like Hurshikesh, 6-year-old Deepak did not know any sign language when he started classes at HHSD in July 2018, because he did not have access to signing at home. This case study tracks his development of sign language skills over a period of 14 months.

Figure 2.4.1: The portfolio starts from his first week at HHSD when he could not respond to another student's signed communication but could only copy the signs.

Figure 2.4.2: Within his first month, Deepak learned from another student in his hostel how to articulate the sign names of other pupils at the school.

Figure 2.4.3: Two months later, in September 2018, the teacher invited six students including Deepak to sign freely with each other, but he was less interactive because he was not yet ready to express himself in sign language.

Figure 2.4.4: In November 2018, the teacher used ISL to ask Deepak to pick up different coloured objects that were scattered on the floor, e.g. 'the green balloon', and he was able to understand the signs and select the correct objects.

Figure 2.4.5: He was also able to articulate the signs for objects such as 'light bulb', 'tree' and 'door' which were drawn on cards that another student showed him.

Figure 2.4.6: In January 2019, Deepak displayed his ability to sign numbers from 1 to 20 by participating in the number game mentioned in section 2.3, in which the students stepped onto numbers drawn on the ground.

Figure 2.4.7: He signed each number correctly while he stood on it. He also practised his receptive abilities to identify number signs in a game where his classmates signed various numbers and he found them on a grid drawn on the blackboard and indicated each one in turn with a pointer.

Figure 2.4.8: During the next month, the teacher held a signed conversation with him about trains, based on a train picture he had coloured in. He interacted well but was unable to answer the teacher's question about who he was travelling with on the train.
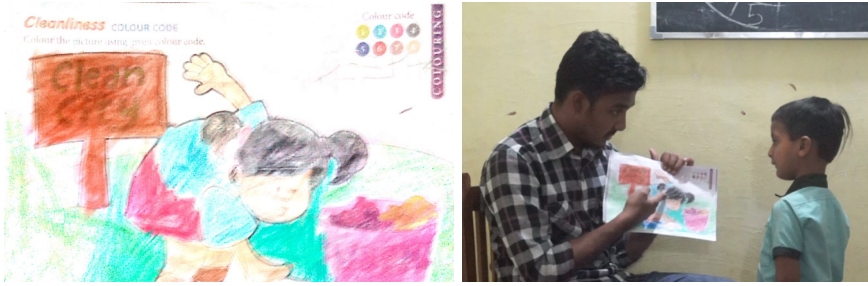
Figure 2.4.9: Later that month, the teacher did a question-and-answer session with Deepak about a picture that he had coloured of a boy tidying up and putting rubbish into a bin. This time, he was able to understand and answer all of the questions. He articulated that he knew it was important to keep his surroundings tidy and not throw things on the floor, because he had learned this from his roommates and caretakers at the hostel.

Figure 2.4.10: By March 2019 he was able to engage in a conversation with the teacher about a picture that he drew and coloured in while his classmates watched and joined in the interaction. He presented his story well and knew how to reply to the teacher's questions. The teacher asked Deepak who was in the house shown in his picture. Deepak said that his roommate lived there and secretly stole mangoes from the nearby tree. Then the teacher pointed to the man next to the house and asked Deepak who it was. He said that it was the headteacher who brought biscuits to school in his car. Then the teacher pointed above the house and asked him what was depicted there. Deepak said that it was a ship. The teacher asked him who was inside it. He said that his father was steering the ship.

Figure 2.4.11: A few months later, in July 2019, he learned about numerical measurements for the first time and was able to sign about numbers and shapes, albeit without fully understanding their meanings yet.

Figure 2.4.12: During the next month, he independently presented a narrative about a typical day in his life with his family, without any visual aids.
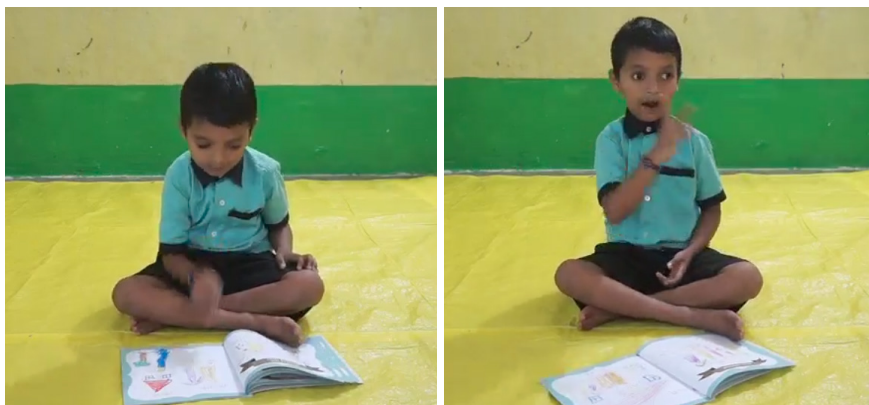
Figure 2.4.13: Then he drew pictures to illustrate his story and compiled them into a book, and signed the story again using the book for reference.

3 Discussion and conclusions

It is encouraging that the Peer-to-Peer Deaf Multiliteracies model of learning has led pupils to develop this range of different skills, as seen from their portfolio processes. The model used in the classroom allowed the students to be creative and learn freely, so that each individual student could choose to nurture their interest in one or more multiliteracies skills. The teachers did not only focus on their written literacy, but also on presentation skills, motivation, confidence, world knowledge, meta-linguistic skills and ICT abilities. Under this model, learning activities, games and visual materials were also co-created by the students.

The eight case studies described above show how the children's portfolio samples reveal a rapidly-emerging foundation of multiliteracies skills in a variety of different areas over a span of less than two years: art literacy for Archana; maths literacy for Hurshikesh; science and technical literacy for Mantosh; sign language literacy for Reenarani and Deepak; and written literacy for Shakit, Chandan and Amit. The progress of these early-years learners was facilitated through the teachers' and students' creation of bridges between sign language and written literacy during the activities, using visual materials and drawing on children's real-life experiences. Engaging methods such as games were a vehicle for the learning content and the children's participation in reading and writing practice.

The case studies illuminate increases in the children's cognitive and expressive abilities alongside the skills in their particular area of multiliteracies. For instance, the development of Archana's creative and

artistic skills included progressing from drawing single objects with no details or context, to producing multifaceted pictures that she could use to narrate a meaningful story. This suggests growth in her capacity for self-expression and complex cognition. This was fostered by the familiar and friendly learning environment and its visual materials, role play, art, crafts, and stories through sign language. These activities were often connected to field trips, shared experiences at the hostel, and birthdays and festival days that were important in the lives of the students and teachers. This meaningful context was a key component of the increase in cognitive skills that was seen in Archana and the other learners. This is also evident in the case of Mantosh, who initially did not know how a solar fan worked, but gained the ability to build and repair electrical apparatuses and present experiments to his peers.

In Reenarani's case, it is apparent that she made progress particularly with presenting in ISL. She was increasingly confident in articulating concepts and meanings in sign language in front of her peers. For example, she gave presentations and led discussions on the solar system and plant growth. She showed a strong interest in leading activities that she created herself. Her confidence and leadership are an indication that this learning environment caused the female learners to feel equal to their male peers, as part of the overall sense of equality nurtured in the classroom. This was built through the teachers' use of sign language and continual encouragement of the students' signed stories and discussions. Having access to this signing environment made the students willing to be interactive with the Deaf teachers and share their views, wants and needs without any fear, leading them to learn not only written literacy, but also multiliteracies.

In addition to the children, using the portfolio methodology also has benefits for the teachers. The visual nature of the portfolios makes them easily accessible for deaf teachers, who can use them to track students' learning and abilities. This in turn is helpful for making lesson plans, following on from the interests that students display in the portfolios. Measuring the students' learning process in the regular portfolios also helps the teachers consider which methods are relevant to the learners. A regular review of portfolios can act as a planning tool for teachers.

The portfolios provide fine-grained evidence about each child's progress. This can be used externally, e.g. to evidence the effectiveness of teaching and learning methods to education professionals or to parents, and internally by the teachers. It is particularly valuable for teachers to capture differences between children with respect to their learning progress over time (cf. the discussion on managing learner diversity in

Nankinga, this volume). The portfolios provide a much richer picture of this progress compared with standard assessments based on correct and incorrect responses. Finally, fear and pressure associated with standard exams is avoided when using a portfolio approach because collection of the documentation happens naturally, and the evaluation of progress is integral to the learning journey rather than a separate activity. This generates a collaborative learning environment from which both children and teachers benefit.

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Collaborative curriculum development

Ulrike Zeshan

In this contribution, I describe work with a group of deaf peer tutors, research assistants, and trainees on creating a curriculum in the area of sign bilingual education (cf. Marschark, Tang & Knoors 2014). This curriculum development is related to the research on peer-to-peer deaf literacy (P2PDL) and multiliteracies (P2PDM), as described in the introduction to this volume. The intended outcome of the curriculum for a two-year diploma course is to train deaf sign language users as professionals in deaf education. Most of the curriculum development work was associated with the third project following P2PDL and P2PDM, called South-South collaboration on deaf multiliteracies, which aimed to intensify the impact from previous research. Part of these impact activities involved working with a group of deaf participants in a residential training programme in India for six months. It is in this context that collaborative curriculum development took place. In this case, the collaboration has been between academics with experience in curriculum writing on the one hand, and practitioners from the concerned deaf communities on the other hand. We developed two separate curricula for India and Uganda respectively.

1 Motivations for collaborative curriculum development in language and literacy through sign language

Collaborative curriculum development, where the intended learner community is an integral part of the curriculum development process, is not a widespread activity, especially in areas that are considered academic subjects such as language and literacy. It is more common to co-develop teaching and learning materials that match existing curricula, and this can sometimes be combined with teacher training and the deployment of teachers from minority language backgrounds in their communities. Interesting examples of such developments are included in Mohanty (2019), who describes multilingual education (MLE) provisions in the context of speakers of minority tribal languages in India, in this case in the states of Andhra Pradesh and Odisha:

> Teachers belong to the respective tribal communities and can use the target tribal language for teaching. Textbooks follow the common

state curriculum and they are prepared in all the tribal languages in the programme. These textbooks are developed by teachers and community members from the target language group, working with experts. The content of the textbooks is based on indigenous cultural knowledge systems, children's life experiences in their community, and songs, stories and games from their cultural practices. (p.172)

The logic of such programmes is quite similar to the intention of our research with deaf communities – first language users of the respective minority languages directly work on materials, ensuring cultural respect and embeddedness. Our work takes a further step and extends the ethos of collaboration with language communities to curriculum development.

Another motivation for the P2PDL/P2PDM research team was that a first draft curriculum which had been written by UK-based researchers was not sufficiently attuned to deaf learners' needs and background (see Section 2). Moreover, the project team had already experimented with learner-generated curricula, and this was an important design feature of our work with learner groups (Fan 2018). It was natural to progress from learner-centred classroom activities to trainee-centred training of future deaf education professionals, including the development of the curriculum.

The aims of a curriculum in language and literacy provision through sign language are expressed in the current draft intended for use in India as follows:

One of the challenges encountered in the existing systems of educational provisions for deaf learners is the lack of trained and qualified language and literacy proficiency teachers who can teach through sign language as the medium of instruction (i.e. the Sign Bilingual approach). There is a need for capacity building and for the creation of opportunities and pathways for people, including deaf people themselves, to obtain formal qualifications in this area. […]

Following the Rehabilitation Council of India's directives on educational options for special education (HI), which includes Sign Bilingualism, the mandate of the RPWD Act (2016) to develop teachers from within disability communities, and the recent National Education Policy, this curriculum is in line with educational policies and enables educational institutions to put policy into practice.

Low language skills, early language deprivation, and functional illiteracy are critical root causes of limited opportunities in the lives

of deaf people in India, adversely affecting their chances of education, employment, and self-actualisation in life. This diploma is intended to address these root causes.

It should be noted upfront that the aim of this work was not to accredit and implement these curricula, which would have been beyond the scope of what the project could achieve. Our aim was to generate curricula and associated teaching and learning materials in a way that increased elements of coproduction between academic specialists and practitioners from deaf communities. This chapter focuses on the methods that supported this collaborative process.

In our context, the notion of practitioner does not imply that everyone involved in the process was already working in education (see Zeshan 2021 for more details on the training participants). The peer tutors and research assistants from India and Uganda who were working as project staff in the concurrent P2PDM project all had relevant experience of organising deaf learner groups in activities for multiliteracies. In addition, several other trainees from India and Nepal also had teaching experience, and some had relevant bachelor's degrees. Other participants had not yet functioned in teaching roles but were aspiring to do so. In any case, everyone had experienced first-hand the type of deaf education currently available in their countries.

2 Stages in the curriculum development process

Early on in the research on deaf literacy and multiliteracies, the project team recognised the vital role of deaf professionals in deaf education. A recommendation to institute professional training for deaf sign language users in order to function effectively in educational roles had emerged from the P2PDL pilot research in India and was included in the policy paper that was published at the end of the project (Zeshan et al. 2017). Subsequently, the first attempt at creating a curriculum for such professional training in India was made by the UK team, with the curriculum written by researchers with a background in sign language research and in TESOL.

Although the rationale for this curriculum clearly stated the necessity for deaf sign language users as professional educators, this target group was initially not involved in writing the curriculum itself. As our work progressed, it became clear that this curriculum did not really match the requirements of prospective deaf trainees. This version was quite demanding with respect to its theory content, with many topics and

sub-topics to cover. Although there was ample provision for practical components such as teaching internships and mock teaching, the content was not really suited to our target group. Therefore, this curriculum draft was shelved as an important first step but not used in practice.

As plans for the six-month training programme emerged, it became possible to think about a collaborative process where the curriculum would be developed jointly by academic staff and deaf learners on the training programme. This process was very different from the first attempt.

For the initial draft developed in the UK, the approach was to evaluate our research findings and capture the necessary skills and knowledge for a new professional profile of deaf educators. In combination with the researchers' previous experiences in curriculum development, the resulting draft was very comprehensive but also quite complex and essentially top-down. Such curriculum-writing is logical and linear, working through the curriculum aims, content themes and sub-topics, and the design elements of course delivery (theoretical and practical parts, assessment strategies, etc). I would like to emphasise that there is nothing intrinsically wrong with this process. Depending on the subject matter, it can work very well, and relying on previous experiences means that the risk of leaving gaps or having inconsistencies in the curriculum design is lower. However, involving non-academics in such a process is not straightforward because of the specialised background and way of thinking involved.

The collaborative curriculum development process that we undertook in the subsequent stage was emergent and resembled reiterative prototyping. One of the reasons for this was that in this attempt, the curriculum development was closely embedded with materials development work. The training group's aim was to develop a bilingual teacher's handbook for deaf people delivering language and multiliteracies education to deaf learners, consisting of signed lectures in the different sign languages of the countries involved, and supporting materials in English for India and Uganda (see Zeshan 2021).

The new curricula are still written in English, but the majority of its content comes from the signed lectures and the content of the capacity building training, which was also delivered entirely through sign language (in this case, primarily Indian Sign Language) as the medium of instruction. Therefore, the development process for this new curriculum was multidirectional rather than purely top-down.

Table 1 summarises the differences between the initial 'academic' curriculum and the subsequent 'collaborative' curriculum. The first-

stage curriculum can be characterised as linear because it started from an overall design concept, which was then refined and enriched in successive drafts, without major changes to the architecture of the overall curriculum structure. The second-stage curriculum, on the other hand, did not have a fixed curriculum architecture to start with, although the initial curriculum was one of the inputs that entered the multidirectional design process. The content of the collaborative curriculum relied considerably on the daily exchanges between the lead academics and the group of deaf trainees. Over the six months of training, and in subsequent further work with deaf research assistants, we returned to the general design questions multiple times in several cycles of prototyping, until we reached a satisfactory format.

Table 1: Differences between curriculum development approaches

First-stage curriculum (academic)	Second-stage curriculum (collaborative)
based on research findings	based on research findings and collaborative activities during training
linear process	multidirectional and cyclical process
general curriculum architecture as starting point	several types of input undergoing reiterative prototyping
written in English	written in English but closely based on signed lectures and materials
developed by researchers/academics	developed by academics and deaf trainees /project staff together

At the end of the training programme, a third development stage followed where I continued working with the research assistants from India and Uganda. These RAs (two from India and two from Uganda) played a particularly important role in all the capacity building activities, including the curriculum development. This is because they were much more experienced than the other participants and therefore able to take on lead roles. They also had a higher level of competence in English and could cope with the curriculum documents.

The result of this curriculum development work is in the form of two separate curricula, one for India and one for Uganda. The overall development process is represented in Figure 1, and in section 3, I detail some of the methods, tools and processes that we used during the development of the collaborative curriculum.
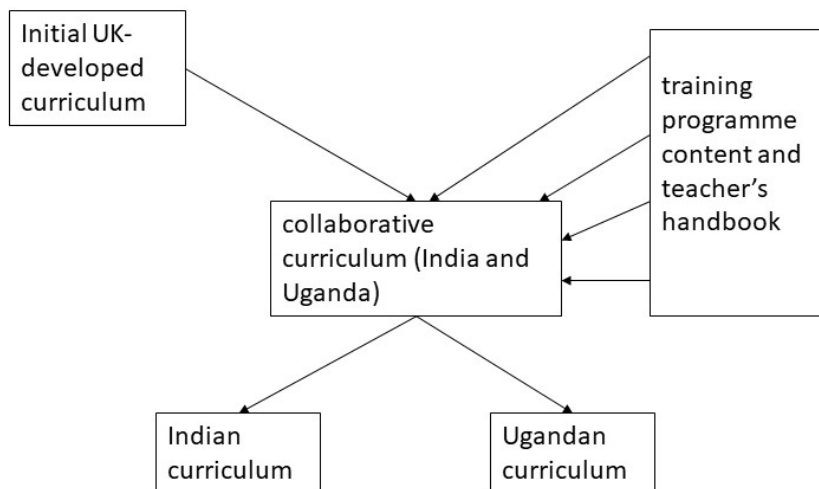
Figure 1: Development process of the collaborative curriculum

Figure 1 shows that the initial curriculum developed in the UK served as one of the inputs into the collaborative development, and this was quite useful as we could rely on it as an example illustrating all the necessary elements of a written curriculum document. The second type of input was the engagement with the group of trainees in the capacity building programme, which continuously generated inputs into the new collaborative curriculum while the training programme was running. In particular, the teacher's handbook was an important factor shaping the curriculum. At this stage, the curriculum content was assembled bit by bit, and there was no difference between the two countries except for having a separate curriculum rationale for India and Uganda. In the last phase of curriculum development, the curricula for India and Uganda diverged more clearly from each other because their requirements were somewhat different (see section 4 about this). The structures of the three curricula (UK-developed, Indian and Ugandan) are given in the Appendix, and both overlaps and divergences are apparent when comparing the structure of modules, units, and practicals.

3   Tools for collaborative curriculum development

For a collaborative curriculum development process of the kind described in section 2, it is necessary to innovate with respect to tools and techniques. This is because we could not rely on previous familiarity with curriculum development or indeed sufficient English literacy to work

directly on curriculum writing. Although the RAs played the most active role in working on the curriculum, others in the group of trainees were also involved in several of the activities.

Some of the activities that contributed to curriculum development during the training were designed to include all of the participants regardless of their background. In particular, we used some game-like activities where the participants interacted with visual prompts in order to discuss aspects of curriculum development. A game activity has the advantage of creating a level playing field where everyone can interact equally (cf. Zeshan 2020). That is, trainees with low literacy levels and no experience in teaching roles could participate in the game's choreography, even if their contributions around the table did not later appear in the curriculum itself. In this way, everyone could derive a learning effect from the activity matching their own skill and knowledge level. For some other curriculum-related activities that required a more advanced level of experience, only a sub-group participated. However, everyone participated in the development of signed lectures, which was organised as group work with a more experienced lead person for each group. The whole group also attended lectures on various general design features of curricula. I now describe some of these activities in more detail.

3.1 Curriculum-related lectures

I gave several lectures about curriculum-related issues to the entire group as part of the regular programme of three lectures per week. Topics included the structure and components of a curriculum (e.g. rationale, modules, eligibility and admission, necessary course resources, etc), perspectives on assessment, and the concept of a 'reverse curriculum' (see the related innovation sketch in this volume). These lectures were of interest to everyone, whether or not they were involved in curriculum writing.

3.2 Signed lectures created by groups of trainees

The bilingual teacher's handbook with signed lectures, intended as a resource for deaf sign language users working in deaf education on language and literacy/multiliteracies, was a central feature of the training programme. The topics include various issues around developing multilingual and multimodal semiotic repertoires through work with deaf learners on the one hand, and general issues of pedagogy on the other hand. The first area covers topics such as using storybooks with deaf children, using authentic texts for reading comprehension ('Real-Life English'), teaching English through games, the concept of multiliteracies,

etc. In the second thematic group, topics include classroom management, memory and learning, leading theme-based learning, self-reflexivity of teachers, and the like (see Zeshan 2021 for details).

The group developed a process whereby each topic was first raised with the whole group, whether through a lecture or another activity, and then sub-groups were formed to work on the production of a signed lecture. There was no predetermined list of topics, target for the number of lectures to be produced, or fixed sequence of content to be covered, although the programme did draw on previous training with the research team and the experiences from the research (see Gillen et al. 2016 for details of one of the training programmes for project staff). Instead, the training programme was an emergent process, where activities were completed at a pace that was comfortable for the learners, and with a high degree of self-organisation of sub-groups. As the body of completed lectures grew over time, this became an important scaffold for the emerging curriculum.

3.3 Curriculum game

The curriculum game took place around the middle of the training period. The aim was to talk about curriculum structures in terms of modules, as well as discussing what assessment strategy would match each module. We played two rounds, one each for a potential Indian and Ugandan curriculum structure (though the final structures that we eventually chose were different).

All trainees participated in the game, regardless of the level of experience or involvement with the curriculum design process. This is a good example of how games facilitate the involvement of participants at different levels of understanding and background knowledge. Individual participants took turns to initiate discussion rounds by picking up index cards with the names of modules, but everyone in the group could then contribute to the discussion of each card. The game preparation included drawing a poster with the visual structure of each sample curriculum over two years, and preparing index cards with the titles of modules to be arranged on the curriculum structure.

By this time, the conceptual space that would have to be covered in the curricula had already taken shape to some extent. Therefore, the curriculum game was prefigured by the posters and the index cards, although the group was still able to make changes to these prompts as the game progressed. In addition, we used a number of props to represent various in-class activities and assessment methods, and matched each

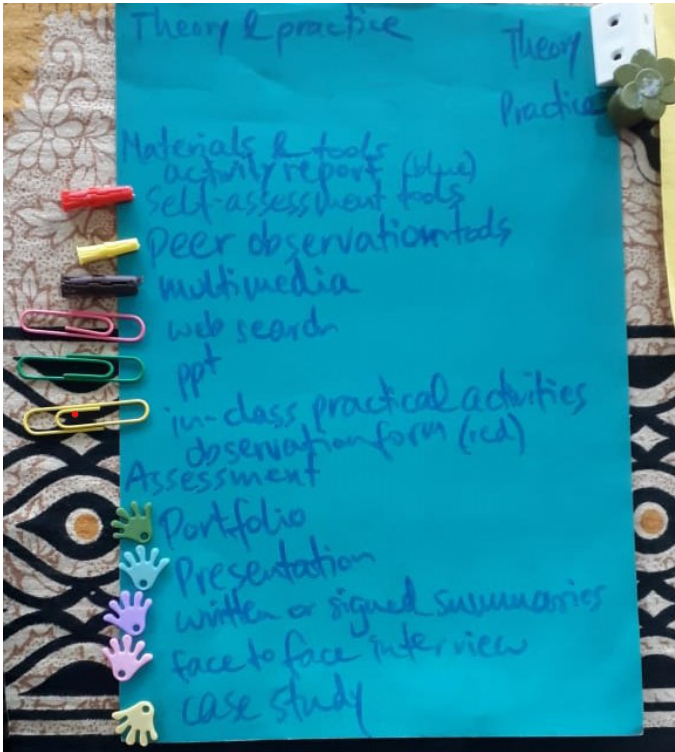module to those methods that were considered most appropriate by the group (Figure 2).

Figure 2: In-class activities and assessment methods

The game was played according to the following rules:

– A turn started by picking up one of the face-down index cards with the title of a module. The player then discussed with the group where the module would best fit in the curriculum structure and placed the index card on the poster accordingly.

– This was followed by a discussion about the assessments that would be most suitable for this module. Players contributed by picking up the tokens representing different types of assessment and placing them onto the index card. The turn ended when some agreement had been reached about the assessments to be recommended for this module.

– It was allowed to move modules and to change assessment strategies throughout the game. Comparison between modules as they were uncovered one by one sometimes changed the overall logic, requiring re-ordering of the props on the poster.

At the end of the game, the output for each country was a curriculum structure with modules mapped onto the structure, and a list of suitable strategies for in-class activities and assessment, represented by props added to the module name (Figure 3).
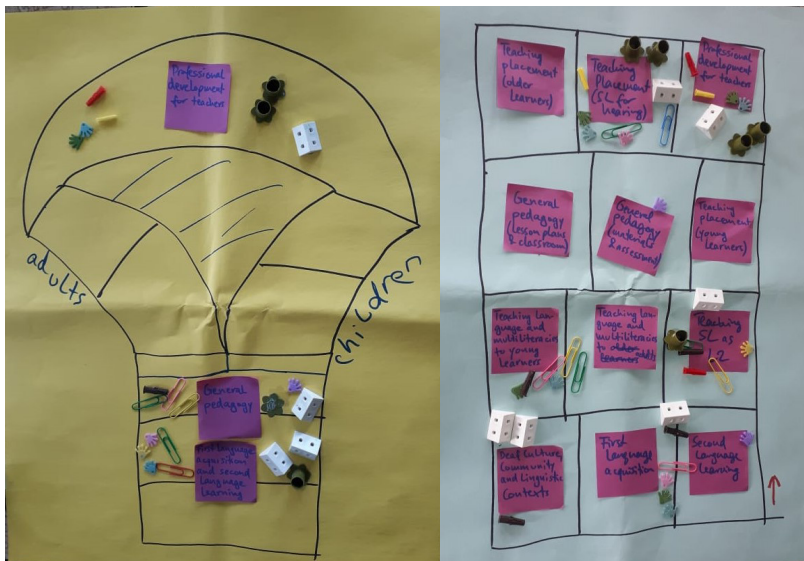

Figure 3: Posters of an Indian curriculum (partial) and a Ugandan curriculum (complete)

3.4 Curriculum meetings

The two Ugandan RAs and the group of Indian project staff had separate meetings, sometimes amongst themselves and sometimes with myself, in order to progress work on their country's curriculum. Towards the end of the training period, there was a "curriculum workshop week" where these sub-groups were asked to discuss specific curriculum design questions. These questions were about issues such as facilitating access to the course for deaf students, the need for a bridge programme, and options for accreditation. After discussion within each team, responses were returned back to me in English by the Ugandan team and as sign language videos by the Indian team.

In the final phase of the training programme, I also held a curriculum design meeting with the trainees. The aim of this meeting was to map the signed lectures and other materials we had created to the curriculum modules that we had decided to include. The result of this mapping is shown in Figure 4. This was a way to take stock of the signed lectures and understand how they related to each other thematically. In addition,

this mapping exercise showed how much teaching and learning material would be available under each thematic area. The aim was for each module in the final version of the curriculum to be underpinned by sufficient materials.

Figure 4: Grouping of lectures under themes

Again, the grouping in Figure 4 does not represent the final structure of the curriculum but was merely another way of structuring the conceptual space. Re-structuring the same conceptual space was an important aspect of reiterative prototyping. This is particularly helpful in a situation where the deaf participants were not experienced with curriculum design. Through reiterative prototyping, they were revisiting similar materials several times and engaging with them from different points of view.

3.5 Curriculum writing

Eventually, the Indian and the Ugandan curriculum had to be written up as a document. Both curriculum documents use the same basic structure but with content specific to their setting. For example, the Ugandan curriculum includes a module on sign language teaching. The Indian curriculum has no such module because there is already an accredited course for training sign language teachers. Some elements have been carried over from the initial document written by the UK team, in particular the details of organising the course around theoretical content and practical activities, such as mock teaching or internships.

Curriculum writing did not follow a process of drafting successive versions of a complete document. Instead, elements were added when they became available. It was my role to guide this process and make

sure that there was an overall structure into which elements could be inserted, and to organise for various parts to be produced in writing. For instance, a description in English of each module, with its objectives and sub-topics, was written by one of the Ugandan RAs and adopted into the Indian curriculum to the extent that both included the same modules.

Finally, it was necessary to keep an eye on the fact that the curriculum should be accreditable in each country, at least in principle. In order to adjust the draft curricula to expected norms as far as possible, we tried to source existing accredited curricula and regulatory frameworks and to liaise with in-country contacts. For the Indian curriculum, this was easier because the initial UK-developed curriculum had used a template from the accreditation authority. However, for both countries it is unlikely that we would have achieved interoperability with existing provisions for accreditation. Although we did not in fact submit the courses for accreditation, we anticipate that questions will be raised by accreditation authorities if the curricula are put forward for their consideration.

4 Opportunities and limitations

The curricula in language and literacy through sign language and their associated teaching and learning materials are at present untested and have been generated as an experiment. Therefore, we cannot claim that these curricula would be successful in achieving their aims, or that they would be accreditable and implementable. These questions need to be resolved at the next stage of work.

Teacher training is a particularly sensitive area of curriculum development because of the power dynamics involved. Teacher training implicitly or explicitly circumscribes the areas of skills and knowledge that are deemed valuable for imparting on students. Indigenous and minority languages have therefore not fared well with respect to being represented, whether at the level of the school syllabus or at the level of the teacher training curriculum.

As Mac Gill (2016) notes in the context of indigenous students in Australia: "Co-creative curriculum would include Indigenous knowledges informed by Indigenous communities in local and specific ways." This argument directly bears on the question of which knowledges are recognised and valued, and the same logic applies to the context of deaf sign language users and our curriculum development initiative. Whether or not accreditation and implementation is achieved, the project will have demonstrated that such collaborative development is possible and that the knowledge of deaf professionals is central to the undertaking.

There are several opportunities arising from this work. Firstly, it is a challenge to existing educational provisions. More precisely, it is a challenge to implicit assumptions as to who is entitled to create curricula. The traditional power structure where only academically trained experts can be engaged in curriculum writing has been suspended in our experiment.

A disadvantage of this approach is that it is difficult to create a comprehensive curriculum document without gaps. As the curricula were assembled successively with inputs from different people, gaps remained at the end of our project. Some of these gaps are visible in the curriculum structures in the Appendix, where a few modules are yet to be developed with sub-topics. The complete documents also have other gaps, for example with respect to the organisation of placements. A further round of revisions will be required to fill in such gaps.

Another consideration is of a practical nature. How do we ensure that this curriculum can be taught by deaf professionals to other sign language users who aspire to work in teaching roles? The best guarantee that the curriculum content can be delivered confidently and competently is if its development has included deaf sign language users, who have also worked directly on creating associated teaching and learning materials.

The latter point is also related to the sustainability of this curriculum initiative. The manual on sign language work in the context of development cooperation adopted by the Word Federation of the Deaf, includes the following recommendation as to the role of advisors engaged in sign language projects with deaf communities:

> If the results are to be sustainable, deaf trainees need to learn new skills by conducting the work themselves. The advisor should adopt a background role; by advising instead of doing, the advisor makes it possible for trainees to implement the work themselves, and sustainable capacity building can take place. The advisor can also encourage the further spread of skills and knowledge, by encouraging Sign Language Work staff to share their experience with neighbouring Development Cooperation countries in the form of South-South partnerships (p.39f).

Notably, South-South collaboration is also mentioned here, which sits well with our context where collaborative curriculum work proceeded in parallel for India and Uganda, with many opportunities of learning from each other. The value of this experiment lies in demonstrating the feasibility of collaborative curriculum development, regardless of whether or not the curricula are formally accredited and implemented.

Acknowledgements

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Appendix

Curriculum outline (UK-developed):

Year / semester	Module title	Units
Year 1 / semester 1	**Module 1:** Deaf Cultures, Communities, and Linguistic Contexts	1: Understanding the context 2: Deaf communities and cultures 3: Deaf communication 4: Deaf identity and advocacy 5: Deaf education and literacy
Year 1 / semester 1	**Module 4 (part one):** How to Teach Language and Literacy (Units 1-5) with **Teaching Practice 1**	1: Lesson planning 2: How to teach vocabulary 3: How to teach grammar 4: How to teach reading 5: How to teach writing
Year 1 / semester 1	**Teaching Placement 1:** Observation and indirect teaching experience in various settings	
Year 1 / semester 2	**Module 2:** First Language Acquisition with **Teaching Practice 2**	1: Key Issues and concepts concerning FLA 2: Key theories concerning FLA 3: FLA and age 4: Deaf children and FLA 5: Differences between FLA and SLA
Year 1 / semester 2	**Module 3:** Psycho-social Aspects of Teaching and Learning	1: The emerging self of being deaf 2: Developmental psychology 3: Family dynamics and deafness 4: Social/Emotional growth and development in school system 5: Social development
Year 1 / semester 2	**Teaching Placement 2:** Direct co-teaching experience and after-teaching reflection in specialist schools	

Year 2 / semester 1	**Module 5:** Second Language Acquisition	1: Basic Language Acquisition Theories/Concepts 2: Learner Language 3: Learner strategies 4: Understanding learners
Year 2 / semester 1	**Teaching Placement 3:** Direct individual teaching experience and after-teaching reflection in specialist schools	
Year 2 / semester 1	**Module 6:** Teaching Language and Literacy to Deaf Children with **Teaching Practice 3**	1: Picture books and Stories 2: Real Life context 3: Getting children to read simple text/book 4: Word order 5: Getting children to write 6: Working with children
Year 2 / semester 2	**Module 4 (part two):** How to Teach Language and Literacy (Units 6-10) with **Teaching Practice 4**	6: How to teach online communication 7: Classroom language testing and assessment 8: Curricular resources development 9: Curriculum and syllabus design and development 10: Classroom management
Year 2 / semester 2	**Teaching Placement 4:** Direct teaching experience and after-teaching reflection in inclusive schools	
Year 2 / semester 2	**Module 7:** Teacher Education and Professional Development	1: What makes a good language teacher? 2: Teacher learning 3: In-Service Teacher Training (INSET) online/offline Workshop/ Seminar 4: Observation and Feedback on Teaching 5: Communities of Practices

Curriculum outline (Uganda):

Year / semester	Module title	Units
Year 1 / semester 1	**Module 1:** Deaf Cultures, Communities, and Linguistic Contexts	Sign Language as a complete language Basic facts about the history of UgSL The community of Ugandan Sign Language users, their commonalities and diversity Deaf communities and sign languages in other countries Aspects of Deaf Culture and linguistic identity Legislative provisions for UgSL in Uganda Status of use of UgSL in deaf education
Year 1 / semester 1	**Module 2:** Foundations of Language and Literacy with Deaf Learners	History of deaf literacy Multiliteracies First Language Acquisition Second Language Acquisition Types of literature Learning and memory Repetition and learning
Year 1 / semester 2	**Module 3:** Pedagogy I: Planning and Managing Learning	Classroom management: Managing people Classroom management: Managing the environment Managing diversity in learner groups Lesson planning
Year 1 / semester 2	**Module 4:** How to Teach Language and Literacy (Part 1) **(with Teaching Practice)**	Real Life English (RLE) Literacy strategies The Reverse Curriculum Activity-based learning
Year 1 / semester 3	**Placement One:** Direct co-teaching experience and after-teaching reflection	

Year 2 / semester 1	**Module 5:** Pedagogy II: Assessing and Resourcing Learning	The logic of assessment Classroom management: Managing resources Implementing assessment Using school books as teaching & learning resources
Year 2 / semester 1	**Module 6:** Sign Language Teaching	[to be developed]
Year 2 / semester 2	**Module 7:** Developing Language and Literacy with Deaf Children **(with Teaching Practice)**	Working with children on early language acquisition with the sign bilingual approach Using picture books with children Working with children on multiliteracies Creating stories with children English through games
Year 2 / semester 2	**Module 8:** Teacher Education and Professional Development	Self-reflexivity for teachers Academic reading and academic writing Tracking continuous learning and development (learning log) Institutional settings and policy context
Year 2 / semester 3	**Placement Two:** Direct teaching experience and after-teaching reflection in inclusive schools	

Curriculum outline (India):

Year / semester	Module title	Units
Year 1 / semester 1	**Module 1:** Deaf Cultures, Communities, and Linguistic Contexts	Sign Language as a complete language Basic facts about the history of ISL The community of Ugandan Sign Language users, their commonalities and diversity Deaf communities and sign languages in other countries Aspects of Deaf Culture and linguistic identity Legislative provisions for ISL in India Status of use of ISL in deaf education
Year 1 / semester 1	**Module 2:** Foundations of Language and Literacy with Deaf Learners	History of deaf literacy Multiliteracies First Language Acquisition Second language Acquisition Types of literature Learning and memory Repetition and learning
Year 1 / semester 1	**Teaching Placement 1:** Observation and indirect teaching experience in various settings	
Year 1 / semester 2	**Module 3:** Pedagogy I: Planning and Managing Learning	Classroom Management: Managing people Managing the environment Managing diversity in learner groups Lesson planning
Year 1 / semester 2	**Module 4:** How to Teach Language and Literacy (Part I) **(with Teaching Practice)**	Real Life English (RLE) Literacy strategies The Reverse Curriculum Activity-based Learning

Year 1 / semester 2	**Teaching Placement 2:** Direct co-teaching experience and after-teaching reflection in specialist schools	
Year 2 / semester 1	**Module 5:** Pedagogy II: Assessing and Resourcing Learning	The logic of assessment Classroom management: Managing resources Implementing Assessment Using School Books as Teaching &Learning Resources
Year 2 / semester 1	**Module 6:** How to Teach Language and Literacy (Part 2) **(with Teaching Practice)**	Creative sign language outputs [to be developed]
Year 2 / semester 1	**Teaching Placement 3:** Direct individual teaching experience and after-teaching reflection in specialist schools	
Year 2 / semester 2	**Module 7:** Developing Language and Literacy with Deaf Children **(with T7 Teaching Practice)**	Working with Children on early language acquisition with the sign bilingual approach Using picture books with children Working with children on multiliteracies Creating stories with children English through games
Year 2 / semester 2	**Teaching Placement 4:** Direct teaching experience and after-teaching reflection in inclusive schools	
Year 2 / semester 2	**Module 8:** Teacher Education and Professional Development	Self-reflexivity for teachers Academic reading and academic writing Tracking continuous learning and development (learning log) Institutional settings and policy Context

The storymakers mini-project: Encouraging children's multimodal writing

Julia Gillen and Uta Papen

1   Introduction

This chapter discusses a particular example of work on multiliteracies, the 'storymakers' mini-project which supported deaf young children in creating their own storybooks. These storybooks were multimodal productions, including writing, drawing and story-telling (in sign language). We begin with an overview of facets of the project that were particularly significant to us, focussing on the concepts of multilingualism and multimodality. We then explain the origins of the storymakers mini-project in Finland and how we introduced and adapted the Finnish work to our project context. The main content of the chapter is an exploration of how the mini-project was engaged with in our three different countries, or more precisely in four settings, one each in Ghana and Uganda and two in India. As will be seen, the mini-project played out in diverse ways and we reflect on this in our conclusion.

The storymakers initiative was part of the wider three-year Peer-to-Peer Deaf Multiliteracies project (P2PDM, 2017–2020; see Webster & Zeshan, this volume). It aligned with the wider project's ethos in not taking a deficit-based approach to deafness as disability (Murray et al. 2016) but recognised the resources and experiences that all learners bring to their education, incorporating these in a series of classroom activities that were geared towards the children's production of storybooks.

Three broad principles lie behind the pedagogic approach of the overall project as well as the storymakers initiative. First, support for sign languages, as the children's first language, is seen as vital for asserting the rights of deaf children to education (De Meulder, Murray & McKee 2019). In our project communities, these are Ghanaian Sign Language (GhSL), Indian Sign Language (ISL), and Ugandan Sign Language (UgSL). Second, since it is crucial that teachers connect with learners' L1, teachers must have sign language proficiency (Murray et al. 2016). Our project recognised the opportunities and needs to train deaf teachers; therefore, a major component of the three-year overarching programme was to provide such training and to support increasing levels of professionalisation

within deaf communities. Third, learning from an earlier one-year pilot study (see Papen & Tusting 2019; Waller, Jones & Webster, this volume), we infused our pedagogic approach with an emphasis on multimodality and multiliteracies (New London Group 1996; Cope & Kalantzis 2000).

2   Multiliteracies and multimodality

To understand the storymakers mini-project and how our partners in Ghana, Uganda and India engaged with it, we need to briefly explain our understanding of multimodality and multiliteracies. Multimodality – the use of different modes such as verbal, visual, gestural and others for communication– takes on a variety of forms when engaged with in different communities. Just as it has commonly been recognised that spoken language is multimodal, with the use of gesture, prosody etc, and that written language is multimodal, as inevitably materialised and visual, sign languages too are multimodal (Hill 2013). A very useful idea for teachers to consider is the notion of semiotic repertoire (Kusters, Spotti, Swanwick & Tapio 2017). This emphasises the idea that everybody has a blend of modes they use in communication, be they deaf or hearing learners. This avoids a deficit-based understanding of deafness. A manifestly multimodal sign language is, to a deaf learner, an essential element of their existing repertoire and a basis from which to expand, for example into English literacy, arts and numeracy. This is what we worked towards in the wider P2PDM project, and the storymakers initiative was part of this approach.

The idea of multiliteracies links closely to multimodality and indeed semiotic repertoire as described above. Multiliteracies assumes that texts, be they digital or paper-based, are always using different modes, such as the verbal, the visual, and the physical-material (e.g. what kind of paper is used). All these modes are equally valued as tools of communication. Teachers who work with a multiliteracies approach use a wide range of texts in the classroom, and they allow and encourage students to create many kinds of texts, including written, visual, gestural and other forms of expression. The concept of multiliteracies is explicitly grounded in a drive for social justice, recognising that historically many communities and their ways of communicating have been marginalised and not valued in schools; it is plain to see that this is very often applicable to sign language using communities.

A multiliteracies perspective can be implemented effectively from early childhood (Lotherington & Paige 2017), and in our storymakers mini-project we worked with children from as young as five. A

multiliteracies pedagogy emphasises playful ways of engaging with and creating texts (Jacobs 2013). An important aspect of the multiliteracies agenda is encouragement of 'a kind of learning which facilitates an active engagement with new and unfamiliar kinds of text, without arousing a sense of alienation and exclusion' (Cope & Kalantzis 2006: 37). As we will show below, the storymakers initiative allowed the children to engage with a form of text which for many was relatively new and to experience themselves as authors of that text. At the same time, the storymakers mini-project was designed to encourage the children to make connections with their own environments and experiences.

We introduced the idea of multiliteracies and how it can be used when teaching deaf children in the initial training for the peer tutors and research assistants that took place in the first year of P2PDM. That training was held at the Happy Hands School for the Deaf (HHSD) in Odisha, India, one of our project partners. All peer tutors and research assistants from India took part, as well as the research assistants from Ghana and Uganda, who cascaded the training to the tutors in their countries. The training included a component on working with picture books in lessons, led by Papen. This covered two elements. In the first element, we suggested using a picture book as an entry point for a thematic unit cutting across subject domains, for example on house construction. In the second element, Papen introduced peer tutors to how they could use picture books to develop children's interest in stories. This was done through first engaging the children in discussions of the images. Papen explained how this step would allow the children to discuss what they see in the pictures, encouraging them to imagine what the story might be about. In the second step, the children would look at the writing of the story as intended by the author of the book.

In this training unit on picture books, Papen emphasised that images and words together tell the story that the book contains, in line with the understanding of texts as multimodal. Throughout the training, we encouraged the tutors to use sign language to allow the children to actively engage with picture books. The tutors were to use sign language to scaffold the children's understanding of the images and of the English text. This focus on images and texts as multimodal underpinned our pedagogic approach throughout the project, extending beyond the use of picture books in the classes, for example to using texts from the children's environments and phenomena in their homes and communities.

3   Background to the storymakers mini-project

The storymakers mini-project that is the focus of this chapter was initiated during the second year of P2PDM. On an academic visit to the Faculty of Education, University of Helsinki, in November 2018, Gillenen encountered the 'Joy of Multiliteracies' project (Kumpulainen et al. 2018) at an inspiring event involving teachers, researchers and other educationalists. The Joy of Multiliteracies storymakers resource was originally designed for teachers in Finland working with young children whose first language is not Finnish (for example children of immigrant families), to enable them to craft their own storybooks. The storymakers kit is centred on beautifully designed individual small books for each child, printed on thick and glossy paper. These books offer a templated semi-structured story space which children can draw and/or write in or even craft with. Teachers are given resources including large cards to introduce parts of the narrative that is given in the children's storybooks (e.g. *Who is the main character? What happens?*). Finally small mood cards, or ideograms, aid group dialogues about emotions. See Figure 1 for an example of a mood card.

Figure 1: A mood card from the storymakers kit (reproduced with permission from Kristiina Kumpulainen and Mari Keso, www.monilukutaito.com)

Facilitated by a Global Challenges Research Fund based at Lancaster University, working with the Joy of Multiliteracies lead Kristiina Kumpulainen and the Finnish artist Mari Keso, we adapted the storymakers kit to our project. We excluded any element unsuitable for deaf children, translated the resources, organised printing and shipping and also created a guidance training video for the peer tutors and research assistants. This guidance promoted multimodal responses to the storybooks, encouraging children to express themselves in ways they felt comfortable. The four of us, Kumpulainen, Keso, Gillen and Papen made

a video recording in spoken English, demonstrating the elements of the resource, added captions in written English, and posted it on YouTube (Kumpulainen, Keso, Gillen & Papen 2019). The interested reader is welcome to watch the YouTube video to gain more understanding of the storymakers mini-project. We then commissioned an interpretation into ISL, the dominant project sign language. We also liaised with peer tutors and research assistants at regular WhatsApp and Skype meetings. During Papen's visit to Indore in September 2019, she discussed the mini-project in detail with the tutor and research assistant based in Indore and via Skype with the two tutors at the Happy Hands School in Odisha. We encouraged them to carry out the storymakers mini-project with the children at times and for a duration that seemed appropriate to them, given their ground level curriculum control.

The mini-project was designed to allow the children, some of whom had very few possessions, the opportunity to craft their own storybooks, comprised of pictures and text in whatever proportion they wished, with support from the adults working with them. Some of the children then individually told their stories in their own sign language to their peer group, with their performance videoed. Overall, the ethos of the mini-project was thus to adapt Kress's (1997: xvi) insight into children's multimodal ways of learning, treating 'individual speakers or writers not as language users but as language makers'.

4   The mini-project locations

The storymakers mini-project was implemented in four locations, in Ghana (one location), India (two locations) and Uganda (one location). In this mini-project, as well as in the wider project, we had carefully considered research ethics. Formal approval was gained through our universities. In each project location, ethics were reflected upon in dialogue with participants. For example, we decided that images of children in stills and videos should be used and, indeed, had to be used so that we could show examples of the children communicating both in writing and in sign language (see section 5 below).

In Ghana the project was located in the Demonstration School for the Deaf, Mampong-Akuapem (Demodeaf), which is an established residential school for young deaf children, part of a large educational establishment catering altogether for children aged around four to adults in their twenties. Thus despite what to more privileged eyes is a materially deprived environment (the children have few or no possessions and classroom resources are extremely basic), the children appeared

well adjusted, healthy and happy, surrounded by deaf culture, where absence of knowledge of sign language is unusual. The first location in India, Happy Hands School for the Deaf (HHSD) is a residential school for deaf children set up by one of the project's partners, in a rural part of Odisha. Again, deafness is pervasive; the school is connected to an agricultural enterprise, focussed on increasing sustainability, diversifying local agriculture and creating employment opportunities. Our other Indian project location, Indore Deaf Bilingual Academy (IDBA), is an urban residential school where the P2PDM project was a supplementary activity for children attending a deaf residential and day school. In Uganda the project offered classes to children attending a school for deaf children, Uganda School for the Deaf (USD), where however teachers are not usually deaf themselves.

5   How the teachers and children engaged with the storymakers mini-project

The aim of the storymakers mini-project was to understand how the children's semiotic repertoires were expressed through their use of diverse modalities. Put more simply, we looked at what the children did with the storybook template, what stories or scenes they created, and how they used different modes to do so. Our second aim was to find out how the teachers engaged with the storymakers idea. We were conscious of the top-down nature of this mini-project, initiated by two non-deaf, white European academics, located in a privileged position, and for most of the time outside the project's field locations. Inevitably, pedagogic ideas and artefacts are transformed as they are brought into new spaces. As Mills and Comber (2015: 94) write, 'Spaces can be seen as contingent and negotiated, constituted by the multiplicity of trajectories that bring people together at a specific time and place'. A teacher and the group of children they teach are such a space. The idea of space here is more than a physical location, a classroom with its furniture, be they tables and chairs or mats and blankets. This room is also a learning space, so we think of space here as a metaphor for an environment where teachers and children interact and learn together in ways they are used to. The tutors in our mini-project conducted their lessons in line with how they understood their role, their prior experiences as tutors and their own abilities as teachers. In each of the three countries, the storymakers mini-project was taken up in slightly different ways, understood somewhat differently by the tutors and engaged with in diverse ways by the children.

Table 1 lists relevant data collected. In addition, we investigated logs of WhatsApp team meetings where the storymakers mini-project was mentioned. Papen also had field notes from visits to Indore in September 2019. We also drew on wider P2PDM data when salient, for example revisiting how picture books had been used in the training in year 1 by Papen (see section 3 above) and how, subsequently, teachers had worked with picture books in their classes (see also Manavalamamuni 2021).

Table 1: Data collected

Data type	No. from Demo-deaf Ghana	No. from HHSD India	No. from IBDA India	No. from USD Uganda
PT reports on lessons, consisting of texts and images on a semi-structured form	5	1	1	3
RA reports, of lessons where present, consisting of texts and images on a semi-structured form	1	0	0	0
Storybooks (photographed)	0	9	10	9
Videos of children signing their storybooks	0	9	9	0

The children's storybooks

We compared the children's storybooks, counting pages, words, sentences, type-token ratios and unclear words and extended this to a quantitative analysis of pictures and length of video. We calculated the mean for each result in each location, including information about age. Table 2 demonstrates our findings of this simple quantitative analysis comparing mean results across the locations.

Table 2: Quantitative analysis

Findings	Ghana Demodeaf	India HHSD	India IDBA	Uganda USD
No. of storybooks analysed	3	9	10	9
No. of videos analysed	0	9	9	0
Mean age	8.5	7.5	8	9.9
Mean no. pages	2	17.8	5.8	13.3

Table 2: continued

Findings	Ghana Demodeaf	India HHSD	India IDBA	Uganda USD
Mean no. words	3	31.2	34.2	77.3
Mean no. words/page	1.5	1.9	6.5	6.2
Mean no. diff words	3	19	21.1	39.7
Mean type-token ratio	1	0.57	0.71	0.52
Mean no. unclear words	0	4.7	0.9	6.7
Mean % unclear words	0%	14.40%	2.60%	8.10%
Mean no. labels present	0	28.3	7.4	14.2
Mean % labels	0%	80.60%	44.80%	20.20%
Mean no. sentences	1	0	6.1	12.2
Mean no. pictures present	1	16.8	3.4	9.9
Mean length (mins) of video	-	2.72	3.01	-

*3 No storybooks were presented as data artefacts in Ghana; this evidence is taken and analysed from images in PT/RA reports.

The findings indicate diversity in many ways. HHSD has the youngest children but by far the most words and pictures. There is a higher proportion of unclear words, suggesting that the children were permitted to be more experimental in their emergent writing but tended to write single words, i.e. labels. At IDBA and USD there were far more sentences, with more words at USD overall. There were more pictures in USD overall, followed by HHSD then IDBA. Data from Demodeaf is limited, so there is relatively little we can analyse with respect to the storybooks. We have included the site despite this limitation as some findings are available about how the tutors and research assistant engaged with the initiative. We now move to discussion of a few illustrative examples from the data.

Example 1: Jitu, age 5, HHSD
Jitu is in his third year at this residential school. Born to hearing parents, he had virtually no access to language until coming to school and beginning to learn ISL. This background is similar to many of the other young children at HHSD. His great enjoyment of the storymakers mini-project is evident through the scale of his efforts: he has produced a book of 20 pages. One page has text only (his two names), and two have elaborate

drawings with several elements. The others all have images combined with words that label the entities in the image such as in Figure 2.
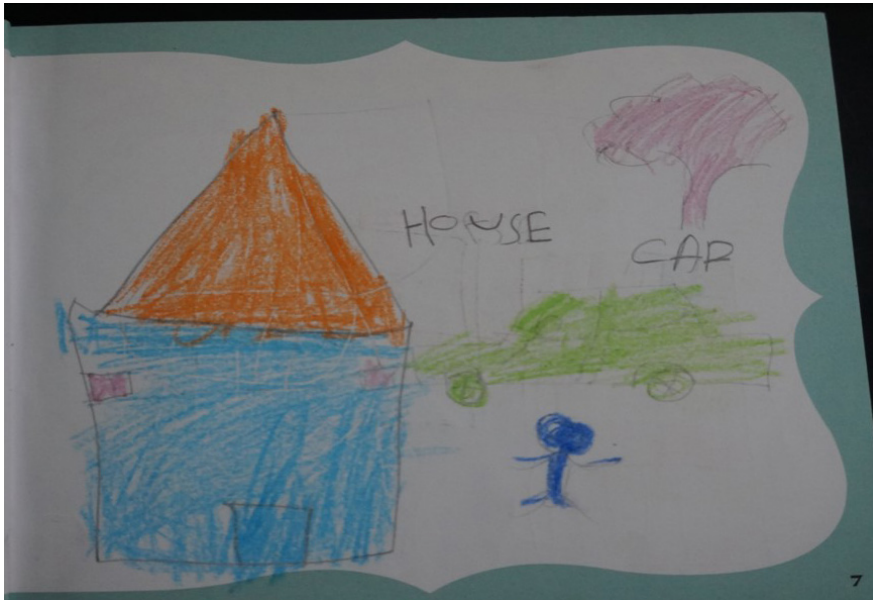

Figure 2: Jitu's storybook

When presenting his book in ISL, Jitu signed names of the objects, as in the image, although he also introduced a few activity words. The book's pages do not feature a narrative structure although there are some connecting elements; for example, an umbrella motif appears twice. This pattern can be explained by the school's pedagogy as observed by Papen on an earlier field trip to HHSD. For children like Jitu, the primary focus in their first years at HHSD was to develop their L1, ISL. English was introduced including through environmental print: labelling objects in and around the school. We can deduce from this that Jitu's practice of providing detailed drawings together with labels reflects his familiarity with this common practice. It is an expression of what he will have perceived as a valued multimodal text in his school.

Example 2: Tanvi, age 9, IDBA

Tanvi has been at her residential school for up to six years. She has produced five pages, two of which are the author name page and a mood illustration. The remaining three feature two narrative stories. Figure 3 shows Tanvi signing an element of the second narrative. There are two characters, a girl and a boy who have been out in snow, felt cold and

decided to go to buy tea. Then in this scene the two have continued playing and built a snowman, and Tanvi has identified herself as the girl in the story. Encouraged by her PT, Tanvi is using fluent ISL in the video. It should be pointed out that this is a significant feat of translation: she is departing from the English syntax she used in the story, for example.

Figure 3: Tanvi and her storybook

Example 3: Tifa, age 8, USD

Tifa, like the other children in her class, began her storymaking activity with an elaborate drawing of a house, in her case with many people in it. Although her storybook is not a conventionally structured narrative story, there are connective elements. For example, on this page Tifa drew and wrote about the activities of characters introduced earlier, some of whom have gone to a shop. Her written English is very well developed by the standards of the class.
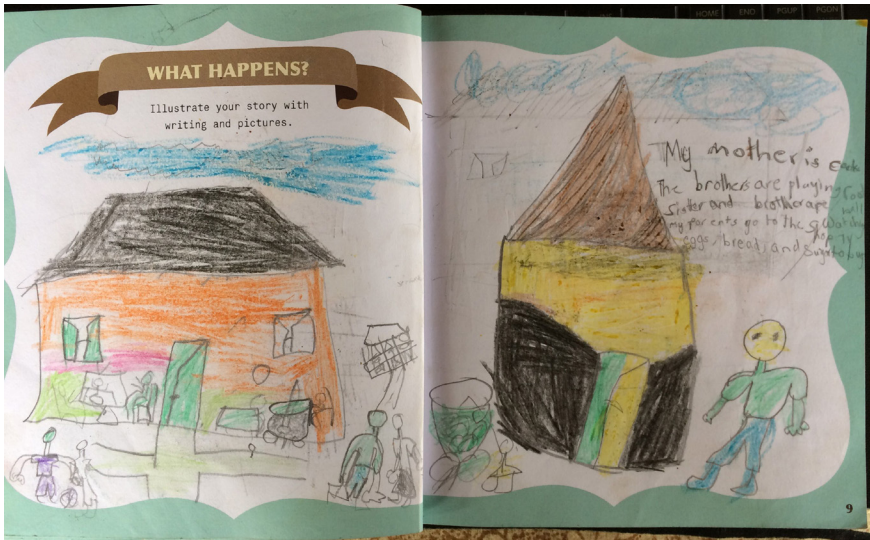
Figure 4: Tifa's storybook

The tutors' engagement with the mini-project

Here we consider our second aim, which was to understand how the peer tutors (PTs) and research assistants (RAs) engaged with the original idea of the storymakers mini-project. One element of this is the usefulness of the training video, when they interacted with it on the ground.

In Ghana, the PT was clear that he had not understood the training video: 'I watched it I was confused small. I'll like to ask my RA to help me out' (WhatsApp Ghana team meeting, 1 August 2019). At another team meeting, two months later, the PT explained his difficulties including that the sign language (ISL) was inaccessible to him as a GhSL user, an insurmountable hurdle in the absence of further support from us.

The Indian WhatsApp team meetings too showed that the tutors sought more support. In Indore, during her visit, Papen wrote up guidance for the tutor and RA and discussed this via an interpreter. While at IDBA, she also had a Skype meeting with the two tutors at HHSD. One of them, at the time, had already used the storymakers books with his group, of which Jitu was a part. All the tutors asked about the extent to which they were to help, guide and correct the children's writing. Should they help the students? Or correct after they had written? Papen proposed an approach where the focus was on text production, on creativity not correctness and she encouraged the tutors to help, scaffold and even co-work or scribe, if the children wanted that. She emphasised that the storybooks were not an exercise or test of correct writing, but that the focus was on

encouraging the children to express themselves in ways that worked for them. She proposed that the tutors would only correct repeated mistakes on frequently used words, but would not stop the children's writing flow with too many corrections, as this might discourage them. Papen also emphasised the value of the children's drawing, in line with the multiliteracies approach.

For the Ugandan peer tutor, the mini-project chimed with her valuing of drawing and multimodal methods as engaging ways into expanding sign language and English literacies, and developing new knowledge and understanding of authentic issues in the children's worlds. In previous lessons, she had often worked with drawings, for example in a unit around houses and house building where she had encouraged the children to draw their family's house. She had used these images to introduce English words to refer to the parts of houses, the children labelling their drawings.

Drawing was an important part of how the children engaged with the storymakers mini-project. The Ugandan PT reported how the children built upon their already established liking for drawings in a particularly committed way in response to receiving their own storybooks, seeking for example 'to draw all the characters'. Some drawings were particularly elaborate, and the mini-project encouraged extensive and sometimes impressively complex writing too.

There is no doubt that our mini-project opened up new spaces for learning, as the examples shown above illustrate. There was one aspect in particular though, where we had assumed that the concept of an imaginative story narrative, rendered in the form of picturebook, was familiar to tutors and children. Picturebooks had been used in the training (see section 3 above), and in some of the classes. But it seems that the idea of imaginative coherent narratives had not been stressed. Other project data makes this clear. For example, when the Ugandan PT had used a storybook *The Three Little Pigs*, her rationale was to connect to the topic of house construction. This was a successful theme for the children, promoting more engagement with local environments and multimodal activities including construction-themed work and some teaching of numeracy. The focus of that work had been on linking teaching in class to the children's environment and to local knowledge, but less on narrative and story-telling.

When the Ugandan tutor began to work with the storybooks, she seemed aware that previously, stories had not been a core part of her teaching and that the children might need input to fire their imagination. She suspected that the idea of a storybook might be relatively unfamiliar

to them. In an early team meeting, she explained 'We are now identifying stories that best suit the children. Also trying to explain how the mood cards work' (WhatsApp Uganda team meeting, 6 August 2019). She began her work with the children on the storymakers activity by introducing them to different types of stories. For example, she compared *Cinderella* with a narrative about an event from her own childhood.

In Ghana too, the peer tutor was conscious that the children might need to be introduced to the unfamiliar notion of story-telling. He did this by signing a short story about his experience and then encouraging children to share theirs with the group. However, this promising beginning developed into several weeks of work on the storybooks. The RA's reports and contributions in meetings show that ultimately a stress was laid on the production of sentences in accurate English to accompany the children's drawings. This emphasis on the production of texts as outputs, valued in relation to standards of correctness, is likely to reflect the tutor and RA's understanding of the curriculum and what was expected of them. This can work against a more expansive ideal of learning as highly exploratory and creative where the activity of creating a multimodal text is of intrinsic value (Leander & Boldt 2013).

As explained above, at both HHSD and IDBA, the PTs and RAs were also concerned about the extent to which they should support or correct the children. This was in line with how they understood their role as teachers, and also appears to reflect that the books were seen as attractive and precious resources for the children. So an orientation to making them 'right' might have been a tempting priority. For example, at IDBA, the tutor asked Papen if the children should first try their stories out on plain paper, so as not to ruin the precious storybooks with drafts. Based on the data we have, including the tutors' reports of working with the storybooks, it seems that they found a way to support children where needed, but that they did not turn work on the storybooks into, for example, occasions for testing grammar, handwriting or any other specific skill. In both of the Indian locations the experience ultimately fitted well into the general orientation towards multiliteracies and other practices. For example at HHSD the use of labels fitted well with drawing and labelling practices in the school where the rooms the children were taught in, the corridor, and even their recreational spaces were decorated with many posters. These posters as well as the children's own productions, often included drawings with labels in English. At IDBA, an important part of the storymakers mini-project was that each child was given an opportunity to tell their story to the others, in front of the class. These performances were filmed, as seen in Figure 3. This practice valued the children's ISL

as a core element of their semiotic repertoire. The storybooks were thus multimodal in not only including drawing and writing but also story-telling in ISL.

6   Conclusion

We can see from the above discussion that, as expected, the teachers and children engaged with the storybooks in different ways. There were inevitable differences in the type of story, scene or event depicted in the children's productions and in the use of English words or sentences to accompany their drawings. This is not to be seen as a weakness but shows that the storymakers kit was adaptable enough to work in our different contexts. Making their own stories allowed the children to bring into their creations ideas from their own lives and environments and even their identities (Pahl & Rowsell 2012). Seeing the final videos (e.g. as excerpted for Figure 3) that we have from Indore and comparing them with previous reports by the tutor and Papen's direct observations, we conclude that the project had provided an opportunity for the tutor to encourage the production of more extended texts than had been the case in other lessons. In other words, the storymakers activity gave the children a chance to try out their writing in English and to use their creativity and imagination to express themselves, in writing, drawing and signing. In other lessons, such writing activities were rare, with lessons being much more focussed on engaging with a specific topic or text. The children's writing was usually much more limited and focussed, for example practising a specific sentence structure or a set of related words or filling in blanks in sentences. Drawing had been rare in the class in Indore.

In each location, the teachers engaged with the project in ways shaped by how they understood their own role, for example in relation to teaching children to learn English and to write correctly in English. The idea of an extended writing activity such as the storybooks provided was, it seems, new to the tutors. The idea of the children as 'storymakers', as creators of their own stories, was also new. For some tutors, the focus on creativity, on allowing the children to express themselves, to create their own scenes or stories was perhaps different from the common understanding of how they should teach English. Whether or not lesson time should be spent on drawing was likely to be questionable for some tutors while it was an established practice for others (as in Uganda). That correct writing was to be less important and that the activity was not to be seen as an exercise but as an activity that was valuable in its own right, was perhaps

an unusual idea. That learning is to lead to a product that can be examined and assessed and that should be 'correct' is of course a common practice in schools. When teaching children to read and write, teachers may wonder to what extent they should simply encourage children to express themselves. This can be called composition. A focus on composition means simply encouraging children to write longer texts even if what they write may include many mistakes. Teachers may however be concerned with having to correct a child's text and they may wonder if they should stop a child when writing, to correct their mistakes, or let them continue with their writing (Papen 2016). The concern for the importance of writing rather than drawing is understandable in a context where the teacher sees themselves as ultimately having the task to develop their students' literate abilities. Multiliteracies too has sometimes been criticised for focussing too much on the product, on what a child has created (Leander & Boldt 2013), and not enough on the value of the activity as such.

When developing the project, we, the academics from the Global North, had seen an opportunity for an activity that had been developed in one locale and for a specific learning context to be moved to other locations. From this move a 'contact zone' (Leander, Phillips & Taylor 2010: 336) emerged between different learning spaces, in Finland, the UK, Ghana, Uganda and India. This was not a 'parking lot(s)' of ideas moved from Global North to Global South, but is better described as 'intersections' (Leander, Phillips & Taylor 2010: 336). The contact zone was not without its challenges, as we have shown, but overall the transfer of ideas across continents and very different learning spaces was possible and productive.

A key piece in the success of the cross-continent transfer were the storybooks. Of course, these were, literally, shipped across continents. Shipped with them was an idea for a multimodal writing activity. The material objects, colourful storybooks for each child to use and work with, were the centre of that idea. We can refer here to Larson and Marsh's idea of artifactual literacies (2015: 99). An artifact or an object, as in our case the storybooks, becomes the focus of a learning activity. While in our project we had the luxury of a beautifully and expensively produced artifact for the children to work with, a luxury that is not widely available, we hope that the idea as such, the storymaking activity, is helpful to teachers and other practitioners, as it allows them to motivate children to see themselves as authors and experiment in a playful space. For the deaf children in our project, the storymakers activity allowed them to use their full semiotic repertoire, writing, drawing and signing, using their knowledge of sign language and English literacy.

Acknowledgements

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