

A Linguistic Approach to Inclusivity of the Deaf in Web-Based Mainstream Higher Institutions of Learning in Uganda: A Case of Uganda Martyrs University

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Abstract

This study was designed to investigate how effectively higher institutions of learning embraced inclusivity of the deaf and hard-of-hearing (DHH) in a web-based education in a heterogeneous teaching-learning environment but, from a linguistic perspective. This study investigated how higher institutions of learning where almost 100% of the students' population had social media as their nearest companion during and after school – give school a wide interpretation to include all teaching-learning centers. However, this study focused on linguistic competence of the learners who were DHH to cope-up with the assigned academic tasks in higher institutions of learning for inclusivity in a web-based learning environment.

Key words. Hard-of-hearing, Higher Education Institutions, Inclusivity of the Deaf, Uganda

Résumé

Cette étude a été conçue pour examiner comment les établissements d'enseignement supérieur intégraient efficacement les sourds et malentendants (DHH) dans une éducation en ligne dans un environnement d'enseignement-apprentissage hétérogène, mais d'un point de vue linguistique. Cette étude a exploré comment les établissements d'enseignement supérieur où presque 100% de la population étudiante avait les médias sociaux comme compagnon le plus proche pendant et après l'école – donner une interprétation large de l'école pour inclure tous les centres d'enseignement-apprentissage. Cependant, cette étude s'est concentrée sur la compétence linguistique des apprenants DHH pour faire face aux tâches académiques assignées dans les établissements d'enseignement supérieur pour l'inclusivité dans un environnement d'apprentissage en ligne.

Mots-clés: Malentendants, établissements d'enseignement supérieur, inclusivité des sourds, Ouganda

Introduction

The post COVID-19 era inevitably ushered in a complete turn-over in the education system world over thus attracting keener attention by stakeholders in the area of a DHH learner. Before COVID-19, several studies had been conducted to investigate inclusivity of the DHH in academia generally not specifically paying attention to inclusivity in a web-based education environment and above all, from a linguistic point of view. Web based education is also called online education or e-learning because it includes online pedagogy. In a web-based education, academic interaction happens synchronously through forums like: email, videoconferencing, and live lectures say video-streaming or zoom lectures. For asynchronous sessions, web-based education also provides static pages through online learning platforms such as Moodle or static pages in form of printed course materials (UN Documents, n.d).

The international scene believes that for inclusivity in education, opportunities should be created for nations, races, classes, and creeds, to mix, work and socialize with each other. Inclusivity in education can be dated back to 1993 when the UN member states pledged to promote education for human rights and global understanding (UN Documents, n.d). To that, the United Nations Education Scientific, and Cultural Organization (UNESCO) played an influential role in the consolidation of the idea of inclusive education for children with special educational needs in schools (UNESCO,1994, Al-Shammari *et al.*, 2019). Inclusive education has been adopted to ensure the quality of and right to education for all learners as articulated by the Sustainable Development Goal 4 (United Nations / sdgs.un.org/) and is now a contemporary educational approach recognized globally (Subotic and Andic, 2014) United Nations Convention on the Rights of Persons with Disabilities, 2016 quoted by Al-Shammari *et al.*, 2019). However, while inclusive education has been enacted from a rights-based philosophy, implementation requires a change in the mindset of school principals and teachers. And, nevertheless, although, teachers were said to support inclusion, the inclusion of different groups of children, especially those with social, emotional, or behavioral difficulties, continued to be considered problematic (Hornby, 2014) in the same teaching-learning ambience.

Munawir *et al.* (2023) state that learning for deaf students is much harder compared to learning for hearing students with special needs. That was reported in research that was done in Central Java Province in June 2021. It was established that the major problem teachers faced in mainstream schools with deaf learners was the lack of a language to aid communication between the teachers and the learners who were deaf. Birinci and Sariçoban, (2021) inform that the first language of the deaf people is usually sign language and in English speaking countries, English is their second language. However, Birinci and Sariçoban add with an example that in non-English speaking countries like Turkey, the deaf learn English as a foreign and third language as had earlier been emphasized by Dotter (2008) saying that taking sign language as the first language of the deaf, the written or spoken national one becomes the second language and any other written or spoken language introduced becomes the third. More so, it is important to note that since there is little instruction on the sign language structure, that renders the grasping of the linguistic features of the deaf learner's second and third languages difficult.

In Africa, some progress in the quality of e-education provided was made though disparities still existed. Nevertheless, increasing efforts towards achieving universal quality basic education was considered as an important way of building a resilient population with qualified and employable workforce competencies. It was unfortunate that

the covid-19 pandemic disrupted the trend towards achieving inclusive quality education by widening the already existing gaps with the introduction of online education. However, governments in Africa had started adopting alternatives pedagogical approaches to face-to-face learning by venturing into digital learning methods (UN world population prospectus, 2019) though in some institutions, there was no proof of providing for the DHH who could not listen to the online lectures and yet majority of the course facilitators also lacked the sign language competence to communicate to the DHH as was showcased in Tanzania (UN World Population Prospectus). Chirwa (2018) states that the Ministry of Education and Vocational Training - MoEVT developed an ICT Policy for Basic Education in 2007 to guide ICT integration in education in Tanzania. In the context of Tanzania, basic education includes pre-primary, primary, secondary, teachers' colleges as well as non-formal and adult education. That ICT policy by MoEVT was implemented in phases with the first phase involving teacher education followed by secondary and primary education. The integration of ICT in teacher education aimed at enabling teachers to integrate ICT in classrooms to achieve educational objectives; facilitate the use of ICT resources in schools as well as facilitating the development and use of ICTs as a pedagogical tool in the teaching and learning process (URT, 2007).

On the other hand, Shailendra *et al.* (2018) indicate that South Africa has a clear e-education policy and that positions South Africa amongst the most developed African countries with an evolved digital infrastructure in place. Vandeyar (2015) on the other hand, notified that there were gaps in the policy comprehension by intermediaries like district and province officials thus hindering effective implementation of the national e-education policy. Henceforth, it was advised that intermediaries needed to participate in the formulation of the e-education policy to render them – the intermediaries, relevant at the implementation stage. On the other hand, Kotouaa *et al.* (2015) informed that Ghana was among the most progressive countries in Africa with much better Internet access. And it was added that online availability of academic access had enabled the working class to improve their skills without seeking a study leave nor resigning their jobs although the overall perception of online education was still not very positive (Kotouaa *et al.*, 2015). Significantly, it was noted that all efforts to modify pedagogy to embrace the e-era was general with no specific attention to special needs that learners went to class with for the case of this study, the DHH.

In Uganda, research indicated a positive impact of a web-based teaching-learning pedagogy in delivering education opportunities (Baguma *et al.*, 2018). A web-based education was becoming trendy in Uganda because it had proved more convenient to both the course facilitators and to the learners. The web-based education melted the physical barriers such as physical distances by enabling teaching of students scattered across the globe. It also enabled learners to access study materials via online platforms or online Learning Management Systems thus reducing the costs of travel and it minimized travel time wastage as emphasized by Baguma *et al.* (2018). As a developing country, it was presumed that Uganda could not be free from challenges of inclusivity as education transformed from the traditional face-to-face learning environment to a web-based education system, a cause for this study, though with particular attention to the DHH from a linguistic point of view. Research then showed that higher institutions of learning in Uganda were steadily transforming pedagogy from the traditional face-to-face setting to a web-based approach. Public and private universities in Uganda started using virtual learning

environments since early 2000s to support delivery of blended learning owing to the increased uptake of technology in many aspects of life, and the benefits of blended learning/e-learning (Baguma and Wolters, 2021). So, one could conclude that much as people had access to life-long learning opportunities that helped them to acquire the knowledge and skills needed to exploit opportunities and to participate fully in society (Transforming our world: The 2030 agenda for sustainable development, UN) it was imperative to faculties in higher institutions of learning to ensure that the learners who were DHH did not at any one moment lag behind the learners who were hearing learning process. Thus, a loud call from a linguistic standpoint for inclusivity of the learners who were DHH in the e-learning environment as the digital trend dictated.

Context. Uganda Martyrs University -UMU where this study was based, was established in October 1993 with 84 students and two academic departments: The Institute of Ethics and Development Studies, and the Faculty of Business Administration and Management. UMU is a university in Uganda affiliated with the Roman Catholic Church. The University is owned by the Episcopal Conference of the Catholic Bishops of Uganda. It is licensed by the Uganda National Council for Higher Education. As of March 2020, UMU consisted of seven Faculties, two Institutes, six Campuses, nine Departments, and three schools. Total student's enrollment was 4,632. Of these, about 1,500 students were residential, while nearly 3,000 students were enrolled in UMU's distance learning programs. The number of staff members was over 400. At UMU's 24th graduation ceremony on 8 November 2018, 2040 candidates graduated with certificates, diploma, bachelors, masters and doctoral degrees. The vice chancellor informed those present that 17 new courses had been introduced, among which was the Bachelor of Inclusive Deaf Education – BIDE program, bringing the total number of courses on offer to 136.

Case Study. The Bachelor of Inclusive Deaf Education – BIDE is study program that was launched at Uganda Martyrs University - UMU in 2019. During the launch, it was clearly communicated that the BIDE project aimed at “improving learning for the learners who were deaf in inclusive and/or specialized secondary schools in Uganda”. The BIDE program came with the following objectives: introducing and /or improving the quality of teaching of learners who were deaf in inclusive mainstream secondary schools to enable them to achieve their full academic potential, sensitizing on hearing care and promoting sign language use. To fully support the overall objective of the BIDE project, two programs were launched and these included: The Bachelor of Inclusive Deaf Education and, the Post Graduate Diploma in inclusive deaf education programs. This was followed by the Training-of-the-Trainers – ToT, session of the course facilitators who were purposively selected from the UMU faculty of linguistics, psychology, science and of foundations of education. To support the teaching of the teacher-trainees who were being prepared to teach in inclusive deaf secondary schools, a resource room was established. In addition, an audiology laboratory was also availed to enable training of the same teachers and for providing hearing health care services to the community around UMU though even beyond to where there would be need. UMU took on the mantle to implement the BIDE project through the Royal Dutch of Kentalis herein referred to as Kentalis International Foundation, which provided the initial funding in addition to providing knowledge at the inception in addition to the Training-of-the-Trainers (ToT) session that was done by the team of expertise courtesy of Kentalis International Foundation. The ToT was done physically but supervision continued virtually though interjected with physical supervision sessions by experts who used to travel from Netherlands to UMU in all the

three years of the BIDE project. The project duration was three years though six months of close working relationship were added at the would-be project end time to compensate for the time that was lost due to Covid 19 pandemic closure of schools.

The Problem Studied. In view of this study, inclusivity of the DHH in a web-based education from a linguistic point of view was the pivot of this research. Barriers to inclusivity included though not limited to geographical location, gender, language, poverty (Enable-Ed and USDC, 2017) and physical fitness. However, e-linguistic challenges to the deaf to cope-up with academic tasks in a web-based education ambience in main stream institutions of higher learning provided the spring board for this study. The world is comprehended through senses. Unfortunately, the deaf lack this key conduit to the world which is the hearing sense through which a wide base of vocabulary is acquired especially through incidental learning. Thus, leaving the DHH with one option of depending on their sign language interpreters. Unfortunately, some DHH lacked even proper signs for many if not all the online concepts. This study therefore, addressed possible methodology that would help to promote inclusivity of the DHH learners from a linguistic perspective in a web-based education in main stream institutions of higher learning.

This study revolved around the following parameters: two broad objectives the first being enhancing linguistic competence among the DHH in a web-based education in main stream institutions of higher learning; and the second, identifying from a linguistic point of view a web-based pedagogy that would foster inclusivity of the DHH in main stream institutions of higher learning. The scope of this study focused on investigating the linguistic competence among the DHH to cope up with learning activities in a web-based education in main stream institutions of higher learning and identifying a web-based pedagogy that would foster the DHH inclusivity in mainstream higher institutions of learning at Uganda Martyrs University. At the time of study, UMU was the only institution of higher learning in Uganda that was offering a study program – BIDE, specific to the DHH studying from mainstream institutions of learning whereas other institutions of learning offered a program that gave a blanket consideration of all special needs that learners went to school with under a general name “special needs education.” The respondents to this study were learners both hearing and non-hearing, course instructors of UMU, and policy makers. The policy makers were not from UMU. More so, information was also solicited from relevant offices and/or purposively selected persons to fill the identified gaps. The additional sources of information included selected students from secondary schools not forgetting that UMU was the major point of focus. The study covered a period of 3 years that is from 2019 to 2023, a period during which UMU rolled out the Bachelor of Inclusive Deaf Education (Uganda Martyrs University Annual Report, 2019) and got the first cohort graduate.

Rationale. This study was intended to and it did provide a sense of direction to inclusivity in a mainstream web-based education in higher institutions of learning for the case of this study, the DHH. The same study paved a lee-way in academia for both accessibility and equal opportunities regarding the learners who were either hearing or DHH. By doing so, this study urged addressing the linguistic academic needs of the learners who were DHH to be able to compete favorably in a mainstream institution of learning and beyond. This study suggested possible ways of promoting co-existence of the learners who were DHH and the hearing ones but, from a

linguistic perspective in a web-based education. The world is accorded meaning through language yet the DHH were challenged with linguistic incompetence of the required e-language. Basing on this study, the ICT system developers were to gain a deeper insight into where more emphasis was needed for technological adjustments to promote inclusivity of the DHH in a web-based education with keen attention from a linguistic point of view. For instance, availing online sign language support system/avatar, to make e-learning deaf sensitive and inclusive.

The findings of this study provided a guiding tool to the policy makers in the development of policies, guidelines and practices for promoting e-linguistic deaf inclusivity in web-based education platforms. It also suggested guidelines for professional development programs for educators, enhancing their knowledge and skills in supporting deaf students in web-based academic interaction. This study was justified for addressing educational inequalities, enhancing e-accessibility, promoting inclusive practices, empowering deaf individuals, informing policy and design, projecting technological solutions, and fostering collaboration and exchange. Making society more inclusive from a linguistic perspective in a web-based environment was central to this study.

A Theoretical Perspective. This study was guided by the Social Model of Disability, coined in 1983 by Mike Oliver who was a disabled academician.

Mike Oliver's Social Model of Disability. The Social Model of Disability by Mike Oliver is believed to have resulted from a mismatch between the person with a disability and the environment insinuating that it is the environment that creates the disability rather than the disability. This model intended to cause a change in society to accommodate with ease people with disability instead of trying to make people with disability to accommodate society. Mike (2004) stated that the Social Model of Disability aimed at diverting attention from functional limitations of individuals with a disability, to the challenges caused by the disabling environment, barriers, and cultures. Mike Oliver advanced that it is society that is organized in a disabling way but not the disabled person's impairment nor medical diagnosis that deters inclusivity of the disabled. Mike further suggested that the problems experienced by the disabled persons were/are not due to functional limitation, but environmental factors that prevented people from fully participating in social life. The Social Model of Disability enables disabled people to look at themselves in a more positive way which increases self-esteem and independence (Spectrum, 2018).

The Social Model of Disability, directly informed this study in way that from a linguistic perspective and in a web-based environment, it was not that the learners who were DHH were proved unable to interact with academic online tasks, rather, it was the online language that was still making it difficult for the learners who were DHH to know how to interact with online academic material in question. In an interview with a learner who was Hard of Hearing at Uganda Martyrs University, due to lack of incidental learning, it was discovered that it took the DHH time to understand that the meaning of many of the generic concepts they knew, meant differently in an online environment yet the learners who were hearing learnt the meaning of many e-concepts through incidental learning. Examples of such ordinary words that meant differently in an online environment

included:

- Windows: These are structural features on buildings or vehicles that can be opened to let in light, air, or vision whereas windows in an online setting refers to Microsoft Operating System that is used to manage files and hardware on a computer
- Viral: Ordinarily referring to viruses or infections yet in an online environment viral refers to e-content such as posts, videos that has spread very fast and gained the attention of the community
- Tag: Normally, a tag is a label giving information about an object it is attached to yet the e-meaning of tag is including or mentioning of a person in a social media online post
- Stream: Known to mean flowing water yet in an online environment stream means live transmission of messages such as videos or audios in an online context
- Troll: Referring to a mythical creature whereas in e-communication troll refers to a person who always seeks amusement from others through controversy
- Meme: From an ordinary cultural perspective, meme means a belief or behavior passed on from one person to another. The e-meaning, meme refers to messages shared in form of images, videos and/or texts carrying in them known references packaged in a humorous way
- Mouse: In ordinary language is a small rodent with a snout, rounded ears, and a long tail. Yet mouse in the computer context, is an input device that is moved physically on a flat surface to enable the computer user to interact with the computer software

In view of the above examples in close reference to Mike (2004)'s belief that it was the environment that challenged the persons with a disability, the DHH's failure to operate the computer programs could not be attributed to the DHH being disabled in one way, instead, that it was an environmental challenge in the web-based learning environment that came with a completely different meaning of concepts for which the DHH only had the ordinary meaning. Consequently, the DHH had to put in extra effort to learn for example the e-meaning of the above concepts which was not the case with the learners who were hearing. It was unfortunate that many of the sign language interpreters used the same sign for both the ordinary concept and the e-concept. The learning environment proved very challenging for the DHH because many institutions forcefully adopted e-teaching as an alternative to physical teaching because of the covid19 lockdown (Gulliksen *et al.*, 2022) despite the lack of ample preparation by the stakeholders in academia.

Nevertheless, the Social Model of Disability came in to challenge the traditional practice of non-disabled persons leading the charities for the disabled persons (Mike, 2004). Mike further explained that the Social Model of Disability did not sideline the concerns about impairment and the relevance of medical intervention for the disabled, he was instead concerned with how society continued to discriminate, exclude, and oppress people with impairments and ended up labelling them disabled. Mike (2023) indicated that the year 2023 marked 50 years since the Union of the Physically Impaired Against Segregation (UPIAS) during which the ways in which the disabled people could become more active in the field of the disabled were considered, and that they also considered the long-term programme of action that would enable the disabled persons to discuss their own affairs both considerations asserting that disability was a situation that was caused by social norms or societal arrange

ments. With the introduction of the BIDE programme at UMU, a team of experts from Kentalis International-Foundation of Netherlands introduced and coached the course facilitators the methodologies of teaching the DHH in an inclusive environment hence enabling the DHH to manage their own learning in an online learning environment just as the learners who were hearing did with little or no assistance required from the course facilitator. Mike, in his Social Model of Disability emphasizes that disability is never an inability.

Related Literature. Related literature is reviewed herein along the objectives of study. The literature reviewed here is from various scholars, individual opinions and report findings exploring the concept of linguistic competence and related information from a web-based education perspective.

Enhancing linguistic competence among the DHH in a web-based education in main stream institutions of higher learning. Several linguistic and cultural barriers stood in the way of inclusive education for the deaf (Alazani, 2021). Deaf students according to Doherty (2012) had special educational needs that had to be considered to make education truly inclusive among which was the ability to communicate within the wider community of the hearing. Unfortunately, research showed that the learners who were DHH had far less connections between word meanings in addition to the very slow vocabulary growth rate as compared to the hearing learners Alazani emphasized. Note that, the DHH could not play pun with words. For example, the learners who were DHHc could know the basic definition of a concept, but chances were high that they lacked the second and third definitions of the concept in question. Consequent upon that, for effective inclusion in mainstream higher institutions of learning, there was need to avail an accessible e-education platform that would promote inclusivity of the DHH by modifying the e-learning gateways as Jemni, Elghoul, and Makhoulf (2007) suggested using a tool based on the creation of multimedia e-learning courses using a websign service which service could permit an automatic interpretation of texts to visible-gestured language using an avatar technology.

Some DHH had sign language as their first language thus posing a problem of language barrier between the DHH and their peers and course instructors. Birinci, and Sariçoban, (2021) stated that sign language was the native language of the deaf and most hard-of-hearing children. However, it was also important to note that even those who acquired deafness after acquiring another language, eventually they also needed to learn sign language. More so, Jemni *et al.* (2007) had earlier informed that sign language was not innate thus called for special training for the affected learner to develop competence in sign language usage. That was because the DHH lacked the auditory input which would act as a stimulant for the second and/or third language learning. Nevertheless, with the invention of the websign service, the teaching and learning of sign language gave a lime light toward sign language usage. Significantly, it was stated that the websign service could teach the DHH sign language at the learner's convenience, the hearing community could also learn sign language through the websign service, more so, that the websign service could also be used as a sign language dictionary. In addition the websign service could elaborate or translate for the DHH, the online study materials by use of web generated sign language. At that point, the avatar-based system mentioned by Jemni *et al.* (2007) proved relevant especially to learners who could have acquired a recognizable sign language proficiency.

In enhancing linguistic competence among the deaf for academic purposes, the use of drawings was

emphasized. Jemni *et al.* (2007) informed that drawing was the first transcription of sign languages to represent lack of writing. Since not all the DHH had developed the desired sign language proficiency, accompanying course content with captions and transcriptions could aid the DHH in understanding the uploaded content with ease in case one understood the language of the captions and the transcriptions. It was also important to note that not all learners who were DHH could use sign language proficiently. A case in point were the post-lingual.

Knowledge of the vocabulary of the second or third spoken language is very important in learning it and communicating in it yet the DHH face the challenge of a barrier to spoken language. For example, the DHH could have sign language as their first language whereas the course instructor could have had English as the first language or a language for instruction at school (give school a wide interpretation) which the DHH lacked. To the DHH, any spoken language will always be second or third and in learning it, though both the DHH and the hearing learners faced some challenges, the DHH faced more difficulties (Birinci and Sarıçoban, 2021). That the DHH could not hear in their first language which was sign language, they missed incidental learning yet the hearing learners acquired vast language through incidental learning. Consequently, the curriculum of the DHH could not include the major language skills of speaking and listening thus rendering the learning of abstract concepts very difficult hence negatively affecting the DHH's writing and reading efficiency. More to the challenge of spoken language barrier, study materials uploaded on e-learning platforms in a language the DHH did not understand would deter comprehension of the study material in question. In such a situation, the affected DHH would need a translator which was not possible every time the DHH intended to access online study material thus calling for the use of the virtual sign language translator for linguistic realism and education advancement.

A web-based pedagogy that would foster inclusivity of the DHH in main stream institutions of learning from a linguistic point of view. With the COVID 19 pandemic impact, web-based education proved inevitable. Nevertheless, earlier studies in the late 20th century had developed different pedagogical approaches derived from the special inclusion models (Loreman, 2017). Fortunately, there were several evidence-based strategies that aimed at providing teachers with an overview of inclusive teaching practices to support inclusion of students with diverse abilities and strengths that came aboard. Many of the suggested strategies were relevant to all students while others were specific to a given category of students (education.nsw.gov.au). Mittler (2012) defined inclusive education as the identification and removal of barriers that would exclude some learners from studying with their peers in the same study environment. Loreman (2017) wrote that for schools to be inclusive, the ambiance needed to be more responsive to children with a diverse range of abilities, cultures, gender, among others aiming at exploring inclusive pedagogical approaches that were adaptable beyond parameters of disabilities contexts. Loreman (2017) suggested the following inclusive pedagogical approaches that had been tested to melt the boundaries of exclusion in study environments: Universal Design for Learning (UDL), Differentiated Instruction (DI), and the Inclusive Pedagogical Approach in Action Framework (IPAA).

Universal Design for Learning (UDL) was defined by Amanda (n.d) as a single teaching approach designed for all individuals with different abilities intended to eliminate unnecessary hurdles in the learning process. Sokal and Katz (2015) on the other hand said that UDL was a philosophy of education intended to provide access to learning and success for all students. To that, Rose *et al.* (2014) added through the Centre for

Applied Special Technology (CAST) model that UDL was based on three principles which include: multiple means of engagement, multiple means of representation, and multiple means of action and expression which rendered it inherently flexible and adaptable to local classroom contexts and circumstances.

Multiple means of engagement which was the first principle of UDL promoted learning varieties which enabled learners to get involved in the learning process. Here, the students learning traits were distinguished for the course facilitator to identify instructional methodology to cater for the learners' variety of interests, abilities, learning styles, mention it that were in the same classroom in order to tap into the learner's motivations, beliefs, self-expectations, and then individual learner's autonomy (Rose *et al.*, 2014). In supplement, Meyer *et al.* (2016), tasked the teachers with facilitating the student's ability to assess their own performance by encouraging each student to sustain effort and persistence through providing very clear goals and objectives. Meyer *et al.* concluded that the teacher had to ensure that individual students did not lose interest in personal academic development, neither would a learner get distracted, instead, the teacher had to entice the learner to always be set for success.

The second principle of UDL presented by Rose *et al.* (2014) was the multiple means of representation which considered effective communication between both teachers and the learners in respect of the different communicative styles and receptive abilities different groups come with. To that, Meyer *et al.* (2016) added that the teacher needed to help the learners to recall prior knowledge by furnishing them with background knowledge. The teacher here had to clarify the target vocabulary, expressions, and symbols to ensure that they were clearly understood by the learners. More so, to ensure effective communication competence, the teacher had to assign tasks that appealed to each of the five senses depending on the learners' category or need in order to produce a holistic style of communication.

Rose *et al.* (2014) presented the third principle of UDL as multiple means of action and expression which focused on individual learner's needs. Nevertheless, Meyer *et al.* (2016) recommended that here teachers needed to work with the learners for goal setting, planning, and the development of learning as a pacesetter for the learners to monitor their progress. Meyer *et al.* suggested the use of a variety of communication styles to include though not limited to visual, written, and verbal communication. That different personalities received and transmitted information in different ways, Meyer, Rose, and Gordon advised that emphasis had to be put on enhancing the communication skills of listening and verbal skills, and improving comprehension and construction of written work. And finally, the use of assistive devices for those with disabilities was also encouraged.

Loreman (2017) fronted another inclusive pedagogical approach called the Differentiated Instruction (DI) which at a glimpse, could appear as a subset of UDL but, the two were different. It was elaborated that UDL operated more at design level creating a study design that would cater for all learners within the same study ambiance, whereas DI involved providing appropriate instruction methodology depending on the study needs of individual learners according to Loreman *et al.* (2010) augmented by De Jesus (2012) adding that a teacher in a differentiated classroom, recognized the varying needs of individual learners and then prepared varied teaching methods by modifying and adapting study materials, content, student projects and assessment in order to conduct a successful lesson. De Jesus elaborated that DI was introduced as an alternative to the traditional teaching mode where a single teaching methodology was employed in a class regardless of the learners' background and abilities.

Nevertheless, DI could not go unchallenged. The temptation was high that the teacher could concentrate effort on particular cases in a class of diverse needs. More to the challenges, Pappano (2011) noticed a lurking gap between theory and practice. For instance, some students expressed discontent on noticing that their assignment was different from the rest of the class. Another challenge was based on the intricacy of the curriculum designed for all but to be taught in different methodology. Thus, the DI teaching methodology was critiqued by Florian (2015) as an inclusive approach stating that to be able to cater for the learners' individual differences, the teacher had to first establish individual learning need/s and the degree, which was an exclusive approach and then subsequently identify the relevant methodology that would prompt inclusivity.

Another pedagogy for inclusive education recently introduced was the 'Inclusive Pedagogical Approach in Action Framework' - IPAA. (Florian and Spratt, 2013). IPAA like UDL, provided a teaching methodology that was accessible to all learners hence promoting inclusivity. In comparison to DI, IPAA provides a single methodology for all learners, whereas DI provided a methodology for all but with modifications accordingly to accommodate learners identified with special needs that were in the extreme, subsequently creating a feeling of exclusion as noted by Florian (2015) and consequently attracting a criticism from Pappano (2011) in favour of the IPAA methodology which promoted inclusion.

The IPAA's major goal is to promote all learners' total participation in the teaching learning process but acknowledging individual differences learners may come with to the classroom (Lorema, 2017). However, there are three underlying broad assumptions to Florian and Spratt's (2013) framework; linking each assumption to associated concepts and actions as elaborated herein: The first assumption in the IPAA framework stated that *difference was an essential aspect of human development in a learning process*. It was urged that course facilitators had to reject the preconception that good academic performance by some students could deter academic progress of others believing that under favourable conditions, all learners could progress though at varying degrees. However, that suggested belief was challenged by the traditional view holding that a learner's ability was largely predetermined and unchangeable.

The IPAA framework presents the second assumption for inclusive pedagogy stating that *teachers must believe in themselves as equipped with the trained skills to enable them teach and support all category of learners in the classroom. The second assumption informs that any challenge faced in the learning process, should not be viewed as a hindrance on the learner's side instead, should considered a challenge to the teaching process*. The third assumption was the teachers' recurring creativity to promote cooperation in learning activities. This assumption discouraged any kind of exclusion in a classroom and within the school large environment. It was assumed therein that each one's contribution at school, automatically translated into one another's academic progress.

It was concluded in research conducted by Florian and Black-Hawkins (2011) into a pedagogy that later came to be known as the IPAA, which IPAA included practices of inclusion that never kept at the periphery any learner regardless of potential and/or ability. The need to implement the IPAA framework, was emphasized in a research edited by Deppeler *et al.*, 2015 introducing various school curricular elaborating the implementation of the IPAA and its contribution to the teaching process.

Methodology

The study was conducted at Uganda Martyrs university- Nkozi main campus located in Mpigi district, Central region of Uganda. UMU running a program in inclusive education which was rolled out in the year 2018 (UMU Annual Report 2019). Nevertheless, additional information was collected from respondents out of UMU who included policy makers, studnets at both ordinary and advanced secondary schools. For this study, the study population was 145 respondents though the target population was a total number of 35 respondents who were purposively selected for their position or professional status in the area of inclusive deaf education.

Data were collected from both primary and secondary sources of data. According to William (2019), primary sources of data are the first-hand information left behind by participants or observers at the time of events. For this study, primary data was collected through questionnaires and interview tools. Secondary data is the data that is already in existence as described by Hassan (2023). For this study, secondary data was collected from: Published books, Journals, Newspapers and Government publications. Data received was interpreted along the objectives of the study in order to analyze the opinions of the research respondents in view of the study at hand.

Field Findings

Under here, the research findings are presented and discussed according to the objectives of the study. Data was collected through administering the questionnaire form, through interviews, observation, and follow-up phone calls. Discussion of data in this section was based on the specific objectives of the study which included: enhancing linguistic competence among the DHH in a web-based education in main stream institutions of higher learning; and a web-based pedagogy to foster inclusivity of the DHH in main stream institutions of higher learning from a linguistic point of view. Research indicated that web-based education could effectively support and promote linguistic competence among the DHH, whereas linguistic competence among the DHH would ably aid success of the DHH in mainstream higher institutions of learning. This section presents and discusses data from the following categories of respondents: the DHH, the hearing, course instructors and the policy makers nevertheless in view of the objectives of the study.

The DHH's Perspective. When asked whether they were in any way challenged with accessing online information, 100% of the DHH respondents said they were very challenged with finding online information due to e-linguistic incompetence largely attributed to lack of incidental learning as already noted above in reference to concepts meaning differently in ordinary language compared to the online meaning. Consequent upon that, they made the following suggestions if they were to be helped to effectively help them cope up with academic tasks in mainstream higher institutions of learning: 100% of the DHH expressed the need to use assistive technologies such as web-sign language interpreters in form of an avatar to enable them have equal access to online information with the required linguistic approach. The introduction of web-sign language interpreters to all DHH in Uganda would ably promote inclusivity of the DHH in mainstream institutions of learning. However more to that, the DHH needed to know that it was not enough to avail the web-sign language interpreter; instead, the DHH needed to be helped to improve their e-sign language communication and development to enable them understand the signs as they would be used by the web-based sign language interpreter. In one of the interviews that were conducted, it was discovered that a biggest percentage of the DHH did not know that there

were web-sign language interpreters/avatar whereas an average percentage had only accessed the already signed information that was online, and, a very small percentage said that they had only heard about online signed information and had never heard of the web-based sign language interpreter. The DHH emphasized that sign language interpretation should not be for only uploaded material but also for instruction about how to navigate through the e-pages to find information.

Another suggestion that was made by 90% of the DHH was the use of video captions but 100% emphasized the need to visualize study materials. Unfortunately, 70% could not link the use of captions to academic online material. Through an interview, it was made clear that the need for captions by the DHH was to enable them watch and enjoy the films as the learners who were hearing did. Only 20% tried to link captions for learning purposes but added that the academic material that was uploaded in written form was always too wordy for the DHH to comprehend. For that case, the same 20% suggested that a summary in form of a caption per page or per slide of uploaded course material would enable the DHH despite the limited vocabulary to have a basis upon which to analyse or comprehend the uploaded study material in question.

The DHH also suggested that to enhance their linguistic competence in accessing online study material, it would do them good if they were availed with interactive spaces such as Moodle, Zoom, and Google Meet with instructions in sign language to enable them practice the gained lexical items in a study environment. Here, they suggested forums that would attract them to active participation and interaction. The DHH specifically pointed out video conferencing and virtual discussions purposely designed for only the DHH to promote e-linguistic competence amongst themselves later to be employed in a mainstream institution of learning ambience. The DHH also mentioned the use of 'Real-time-chat' as a tool that allowed learners to ask questions, seek clarification, and engage in discussions providing an additional means of communication thus, allowing them to practice the linguistic elements they would have acquired.

Otherwise, with the above suggestions not implemented, 100% DHH respondents feared they would continue feeling not effectively included in the web-based academic environment in reference to the e-language incompetence. 35% of the DHH were quoted having written in a questionnaire saying that they felt unable to fully grasp the concepts being taught. In an interview, that statement was elaborated to mean that the DHH lacked the language to comprehend the study material that was availed online. Another 35% of the respondents stated that in comparison to the traditional mode of teaching, the DHH felt more excluded in the web-based education due to their linguistic incompetence to navigate through the web pages.

In all, the DHH concluded that they did not yet have the same learning opportunities with the learners who were hearing because they – the DHH, had almost zero access/or limited access to spoken language. In the filled questionnaires, the DHH also added that they found online academic interaction somehow difficult for them though nevertheless, they said that tasks assigned to groups of both the hearing and the DHH, made online academic interaction somehow easy as compared to when such a task was done by the DHH alone.

The Hearing Learners View. At least 20% of the hearing respondents said that they had ever studied with a DHH in an online class, yet 80% of the hearing respondents said that they had never studied with a DHH neither in a physical nor an online class. The 80% of the respondents who were hearing said that they lacked the

linguistic competence to communicate with their colleagues who were deaf though nevertheless, they all showed interest in gaining the signed linguistic competence to communicate with the DHH for the promotion of learning amongst themselves regardless of whether one was hearing or DHH. Fortunately, 100% of the hearing respondents indicated that they had no problem studying in an inclusive deaf environment but expressed the need to gain the required linguistic competence by both categories of learners if meaningful learning was to ensue especially in an online environment.

To create and sustain an inclusive deaf learning environment, the hearing expressed the zeal to learn sign language as also the DHH needed to gain competence in comprehending written material in both physical and virtual environments. Such a practice, it was believed would result into linguistic competence for each of the categories of the learners and automatically facilitate learning from each other that is the hearing and the DHH in an online setting.

The learners who were hearing more so suggested that it would be very apt if academic institutions offered courses which would be compatible to the learning needs of the learners who were DHH. Through an interview, it was elaborated that the learners who were hearing were referring to courses that would educate the DHH the web-based language that was needed for academic interaction. The learners who were hearing also suggested institutions of higher learning availing sign language interpreters for the learners who were deaf instead of the DHH each getting a sign language interpreter or the DHH getting sign language interpretation services from their course-mates who were hearing and could communicate in sign language yet they were also students who had their academic demands to meet. Fortunately, 100% of the learners who were hearing expressed willingness to participate in any activity that would foster inclusivity of the DHH in a learning environment with special emphasis on the web-based learning environment.

The course Instructors' Opinion. Among the respondents of this study were also course instructors. 80% of the course facilitators said they had ever taught an inclusive deaf class and 20% said they had never had a DHH in any class they had ever taught. To enable an inclusive deaf class, as was mentioned by the learners who were hearing, 20% of course instructors suggested that academic institutions in Uganda needed to provide sign language interpreters during lessons/lectures. It should be noted that the course instructors who asked for sign language interpreters were either deaf or Hard of Hearing who also needed a channel through which to reach the learners who were hearing. That kind of jeopardy already noted among the learners who were DHH and then the course facilitators who were also DHH echoing the same, emphatically portrayed the plight of the DHH in inclusive higher institutions of learning thus calling for specialized deaf intervention approaches if meaningful and effective deaf inclusivity in higher institutions of learning was to happen.

On uploading the study material, the course facilitators suggested a compulsory use of captions/subtitles for video recorded study materials such that deaf inclusivity continues even in the web-based parameters. 20% of the course facilitators who were DHH added a suggestion of the use of video enabled lectures in which the audio-visual lecture would be signed to provide the DHH with a package that would aid comprehension of the uploaded study material without seeking external physical assistance. It was added that course instructors who would record their lectures, needed to face the audience direct to enable the Hard of Hearing lip-read that that would also enable such students study in a web-based teaching-learning environment.

In all, one course tutor encouraged more use of written material than audio study material in a web-based setting such that the DHH with reading competence would benefit from reading the uploaded study material.

When asked which language should be used basically during online lectures, the course instructors suggested a language understood by the majority learners of a class in question meaning that, if the biggest percentage of the learners were DHH, sign language should then be used and where the majority learners would be the hearing in an inclusive deaf class, then, spoken words supported by sign language would be more deaf inclusive in an online academic environment. 20% of course instructors insisted on the use of Standard English as a medium of instruction because Standard English was the formal language of instruction in Uganda, but added that the sharing of notes approach would enable the DHH follow the study material with the help of the available sign language interpreters either physical or in form of an avatar. When asked on what kind of resources should be used to enable the DHH feel included in the web-based academic environment, 100% of the course instructors suggested encouraging the DHH to orient themselves on the best use of the internet services. 20% of the course instructors added that stakeholders in academic institutions of higher learning needed to organize special sessions for introducing the DHH to media platforms like WhatsApp, Moodle and all other available teaching-learning platforms through which learning materials could be shared, that that would promote inclusivity of the DHH in the e-learning environment.

The Policy Makers View Point. All policy makers interviewed (100%) agreed that they were aware of the existence of the DHH in mainstream institutions of learning at which 70% said that emphasis was at the primary school level though with minimal attention at higher institutions of learning of recent by then. The New Vision newspaper (2023) gave a report of an increase in the number of special needs candidates that sat for the Uganda Advanced Certificate of Education –UACE as having increased from 208 in 2020 to 222 in 2022 of which 12 were categorized as deaf. The report added that 5% of the children with disabilities accessed education through inclusive schools but note that the 5% learners were labelled special needs not specifically the DHH. The blanket awareness by the stake-holders was not enough to enable a special needs education learner to progress well neither in an inclusive nor a specialized institution of learning and could be the reason for the high drop-out rate of SNE learners at higher levels of education. For instance, the New Vision newspaper continued to report that out of 172,864 SNE learners at primary school level, 27.2% had a hearing impairment but the number went low at secondary school level with a lesser number of 8,945 SNE learners that is 0.6% from which, the took the biggest portion. So, much as the stake-holders were aware of the existence of SNE learners in inclusive schools with particular reference to the deaf in this study, there was a lot still required to ensure effective deaf inclusion. It should be noted that no official report was by then made about the SNE enrollment in higher institutions of learning in Uganda.

When asked whether there were policies that had been drafted to promote inclusivity of the DHH in a web-based education, 100% of the policy makers said they had policies drafted to create a conducive environment for the DHH though more induction programs were needed across levels of education. In reference to legal and policy framework, Nabulime (2019) stated that disability was then recognized as a development concern which required inclusion as was stated in the Sustainable Development Goals – SDGs. As was already noted that Uganda used a blanket approach to inclusivity of SNE learners, in reference to the DHH for the case of this study, one policy maker was quoted saying that fortunately the DHH persons were able to see texts, images and gestures on screen

implying that at least, with written or visualized study material, the DHH more advantaged in case the study material in question was prepared well. That observation was explained that it informed policy that virtual instruction, such as Zoom-facilitated lectures or web-based learning, needed to emphasize visual aid, including text-handouts, lots of image illustration and sign language usage in order to translate the sound-based communication for the DHH persons. The opinion of the policy makers further suggested that purely sound-based instruction, like audio recordings and telephoning, could only be limited to persons without hearing disabilities but accompanied with a lot of visualization in case of an inclusive deaf class regardless of whether the learning environment was physical or virtual. Such a contribution, implied that the policy makers were ready to create a conducive environment for the DHH in mainstream institutions of learning and significant was the fact that the respondent policy makers even knew what they had to do in order to accommodate the DHH in a web-based education environment though policy somehow still sidelined higher institutions of learning at large.

It was added that in web based education, integrating a sign language translator in real-time-chat, or during video conferencing platforms like Zoom, Google Meet among other e-learning platforms, would promote effective inclusivity of the DHH. That implied that the use of sign language interpreters in higher institutions of learning was at the periphery though was acknowledged as a major solution toward inclusivity of the DHH in mainstream institutions of higher learning taking an extra mile into online education. It was further suggested that the promotion of inclusivity of the DHH was feasible if online platforms embraced the visual approach of the teaching-learning methodology thus making content delivery more of a visual approach when handling a class with learners who were deaf.

About a language to be used as a medium of instruction that would foster inclusivity of the DHH in a web-based education environment, 70% of the policymakers who held government offices said that in some schools at primary level, sign language was encouraged and taught especially in lower special needs sections annexed to mainstream primary schools for which the teachers were trained to communicate in sign language and the same teachers could double as sign language interpreters for digital lectures. Inferring such a perspective of a policymaker in a public office that sign language was majorly used at lower levels of education and nothing mentioned for higher institutions of learning, raised a lot of questions though according to the National Curriculum Development Center, the Ordinary level curricular was already developed and the Advanced level curricular was still underway (Nangonzi, 2023). By policy, the senior four candidates were to be examined in sign language as one of the optional subjects with effect from 2024. On the other hand, the policymakers who held offices with a catholic church background said that there was no policy on sign language usage in the diocesan education secretariat policy by then though sign language usage in Special Needs Education academic institutions was observed. Consequent upon that, it was clear that for both public and/or private institutions of learning, policies for inclusive deaf education were still lacking but were being developed. Fortunately, all policy makers were well aware of the existence of the DHH in specialized schools thus calling for attention to promote inclusivity in mainstream institutions of learning for the case of this study inclusive deaf education.

Web-based pedagogy to foster inclusivity of the DHH in main stream institutions of higher learning from a linguistic point of view. From the policymakers' perspective, it was suggested that regulating bodies needed to organize seminars or webinars for the teachers of the DHH who were already in academic spheres of teaching to

induct them into handling an inclusive deaf class. Nevertheless, important to note was the fact that the National Curriculum Development Center – NCDC in conjunction with Kentalis International Foundation from Netherlands had by then started working on developing online study materials for the DHH in which the designed materials were to benefit the learners who were either hearing or DHH. Several workshops had been conducted to pilot the induction of teachers (give teachers a wide interpretation) awaiting linking up with all other regulating bodies to train all other academic staff. The workshops had been organized in a phased manner each handling a different learning aspect. The workshops held, the first one was ‘coaching of teachers for the development of online learning materials for the deaf’ – this workshop was held at Uganda Martyrs University in phased intervals in the year 2021 and 2022. Another workshop that NCDC held in the year 2023 in conjunction with Kentalis International Foundation was titled: ‘Reading Method for Early Literacy – Blended Teaching’. Such arrangements gave a lime light for the inclusion of the DHH in mainstream institutions of learning once for instance NCDC combined effort with all academic regulating bodies such as National Council for Higher Education, Ministry of Education and Sports, The Business- Technical and Veterinary department, all in Uganda. According to the policymakers, the content developers and regulating bodies, would surely inform the drafting of policy making it in favour of the DHH studying in the same learning environment with the learners who were hearing.

One policy maker suggested the need to install avatar sign language interpreters on all study computers in institutions of learning if the DHH were to freely interact with uploaded written study material at any time of their convenience in mainstream institutions of learning. However, both the course instructors and the learners also both hearing and the DHH needed to be trained on how to manage learning with the help of a sign language avatar. On the other hand, policy also suggested tasking the course facilitators to caption or add subtitles in the uploaded study videos such that in either way, the DHH and the hearing equally benefitted from the same learning material with ease.

All policy makers (100%) strongly advocated for the visualization of the uploaded study materials to enable the DHH comprehend such material with minimal or no assistance from a course facilitator. The use of graphs and charts in addition to a text for example, would enhance comprehension of the study material in question as the DHH would ably establish the relationship or make connections between complex concepts. Reference was made to uploaded written study material that could be accompanied with signed videos such that both the hearing and the DHH could benefit from the same information. However, through a discussion, it was emphasized that there was need to know when course instructors needed to sign study material in sign language grammar or in Standard English also known as the Received Pronunciation to enable the DHH benefit fully from the uploaded study material so as to be able to compete favourably in the same learning environment with the learners who were hearing. The use of visuals was more so justified with a reason that visualization attracted, increased, and maintained the DHH’s engagement with the uploaded study material thereby motivating them to discover more thus acquiring more learning just as the hearing would do.

At policy level, it was also suggested that installing of performance trackers would help the course instructors to use e-visual mechanisms to enable them monitor the DHH on how meaningfully they interacted with the uploaded study material and whether there was any learning progress achieved. The use of performance trackers would enable the course facilitators to assess how effectively they impacted on the DHH’s learning progress as to inform the subsequent

subsequent lesson preparations for the information to be uploaded. The policy makers concluded that all stakeholders needed to be sensitized that the inability to receive sound-based messages was not a reason for special consideration for the DHH to join a university. That it would be always necessary to remind the DHH of the need to score the required pass mark like the hearing learners had to do if they were to compete favourably to access university education.

For pedagogy, the course facilitators were asked to comment on the fact that the DHH asked obvious questions that the hearing learners did not ask. To that, the course facilitators said that it was very common always due to misinterpretation of the question on the side of the DHH or the sign language interpreters. As a solution to the misinterpretation of information on the side of either the learners who were DHH learners and/or the sign language interpreters, 100% of the course facilitators said that rephrasing or simplifying the question would be the best remedy. However, the course facilitators indicated that replying to all the queries by the DHH was near to impossible because the biggest percentage of the DHH had limited exposure and also had a small vocabulary base in the context of Uganda. Nevertheless, the course facilitators informed that as was the case with the learners who were hearing, even the DHH had varying skills and competences that needed to be handled with specialized attention and interest by the course facilitators though not with exclusive methodologies as already noted by Mike (2023) in the Social Model of Disability if an online inclusive deaf ambiance was to be ensured.

On the other hand, 90% of the learners who were hearing said that it would be fine having the same learning materials with the learners who were deaf. On the other hand, 20% learners who were deaf said that the deaf did not have to learn the same study material with the hearing since they could not hear the spoken explanation. Linking having the same learning material to accessing uploaded learning material to various learning platforms, the learners who were hearing said they did not find any problem in accessing online material because they benefit from incidental learning. On the other hand, in reference to the learners who were deaf, 100% of the hearing said that institutions of higher learning in Uganda needed to do more in catering for the academic needs of the learners who were deaf to enable them compete favourably with the learners who were hearing. The suggestions for interventions included: availing hearing aids at affordable prices, making the teaching of sign language compulsory in teacher training institutions and/or establishing sign language clubs in schools to foster deaf inclusivity especially in academic institutions.

Inclusivity of the DHH in Mainstream Institutions of Learning. The challenges given herein were articulated in view of the objectives of the study as were articulated by the study respondents. The learners who were hearing said that they were challenged by how they were supposed to accommodate the DHH in the same study environment. The hearing who had studied with the DHH, said that deaf inclusion would be easy and interesting if the hearing could communicate in sign language. 100% of the learners who were hearing emphasized the need to teach sign language across board of academia such that society was empowered to accommodate the DHH regardless of professionalism or status.

The Hard of Hearing learners said that they were challenged mostly when they were tasked to bring their own sign language interpreters at university a cost their parents could not afford. Consequently, they had to depend on their course-mates who could sometimes sign for them; alternatively, they could resort to lip reading. Of the two options, lip reading they say was more challenging because in most cases, they ended up misinterpreting the

information communicated thus leading to wrong comprehension. There were some DHH who got hearing gadgets through donation but it took them time to learn to use them though never the less, the learners who were Hard of Hearing that chanced to get the hearing gadgets acknowledged that despite the challenge of adjust to using the hearing gadgets, their interaction with their peers and performance on their respective study programs noticeably improved.

Another challenge mentioned by the Hard of Hearing was that it was at university they realized that sign language also had varieties. The Hard of Hearing lamented about language barrier this time not of the spoken language, but language barrier of the sign language dialects. One Learner who was Hard of Hearing was quoted saying that his colleagues were not familiar with his sign language mechanisms. Such a disagreement in the sign symbols used, was also noted by one of the course facilitators who said that she observed it when she was teaching at a time there was a sign language interpreter who used a sign that was completely different from the sign symbol that she knew. So, much as spoken language was a linguistic barrier to the DHH, the varieties within sign language also proved a challenge to the learners who were DHH thus negatively affecting their academic progress and would definitely be worse in a web-based education where such a student would get no immediate intervention from an expert.

The course facilitators stated that during the teaching-learning process in a web-based inclusive deaf academic environment, the biggest challenge was to balance the two categories of learners in the same learning web-based study environment that is being slow in order to allow the DHH follow the uploaded lecture notes and/or video, yet at the same time, catering for the learners who were hearing and would automatically get bored and eventually loss interest in learning the material in question. Fortunately, that never discouraged the course facilitators from teaching an inclusive deaf class because they instead expressed interest in continuing to think outside the box by providing testing and interactive activities for the learners who would have read and completed a reading task before the others or designing the reading materials in a way that would enable progression of one learner without waiting for all other learners to be on the same page. The course facilitators said that not all DHH were slow depending on one's linguistic competence because, some learners who were hearing were found to be slower than some DHH. Nevertheless, that did not solve the challenge of balancing the two groups because some study material required all learners regardless of a disability to be on the same reading pace or page.

Another challenge the course instructors met was the lack of incidental learning by the DHH coupled with the little linguistic exposure that rendered very many e-concepts new to them. To make matters worse, the bullying, bad enough from their course-mates, that was associated with web-based interaction easily made the DHH withdraw into themselves thus affecting their academic progress. The course instructors also informed that the learners who were DHH on several occasions would fail to identify their e-learning challenges as a result of their limited knowledge of e-language a situation that made it difficult for the course facilitators to know where to put emphasis. More about linguistic competence, some DHH learners and sign language interpreters had not yet attained the required sign language competence to enable them successfully interact with academic tasks in mainstream institutions of learning and worse in a web-based education. An example was given where the sign language interpreter used the same sign for a window which is a shutter and the windows of a computer. That was a challenge a course facilitator who was not a competent user of sign language could not easily identify neither would the learners who were DHH know the problem due to their very low vocabulary base especially of the e-concepts. It was also noted

that many of the available sign language interpreters were not competent to sign language interpretation tasks at university level.

On the side of the course facilitators, they were challenged with the lack of technical knowhow of handling the DHH in a web-based teaching-learning environment. The course facilitators informed that they laboured hard to identify areas that were challenging to the DHH but because they – the teachers also needed more training in handling the DHH in web-based education, on several occasions they became oblivious of their existence in the same class with the learners who were hearing and prepared learning material favouring only the hearing. In addition to lacking the technical knowhow of handling an inclusive deaf class, the course instructors pointed out their lack of the major medium of communication that was sign language. They added that the few graduates who had studied the BIDE program at Uganda Martyrs University to teach a deaf inclusive class at secondary school level, were unfortunately not yet absorbed in government mainstream institutions of learning though important to note was that the Ministry of Education and Sports had pronounced itself on recruiting them and also UNEB had announced that examining students in sign language as an optional subject was to be effected in the year 2024. However, many respondents of this study implied that the delay by the Ministry of Education and Sports in Uganda to pay specialized attention to the learners who were deaf not forgetting all other special needs that learners went with to school, was because many of the academic stake holders in high offices gave a blanket consideration of all special needs either ignoring or not knowing that each special need required a specialized attention and professional handling.

The inadequate e-learning gadgets also challenged deaf inclusivity in mainstream institutions of learning. For instance, many learners both hearing and DHH, had no individual laptop computers and only depended on the university desktop computers. That complicated follow-up of an e-learning task by the learners because chances were minimal of the DHH learner in question to use the same public desktop computer for consecutive days yet some learning instructions specific to the DHH or work in progress for the DHH could have been saved on specific desktop computers which desktops were not solely reserved for any one DHH's use during the self-learning sessions. In the case Uganda Martyrs University where there is a fully fledged department of the deaf, there were desktop computers installed but sometimes one would still find it had to use the same computer consecutively because ownership was not individualized since the computers in the department were a property of the university.

The DHH and their parents thought there would be special consideration of the learners who were DHH that could have managed to attain a certain level of education in both academia and career spheres. This was so because in Uganda, many parents rejected the deaf and the severely Hard of Hearing as they considered them incapable of succeeding at anything academic. This was made worse by Mainstream institutions of learning at lower levels of education not admitting learners with extensive learning difficulties. The DHH basically studied from specialized schools which were very few in Uganda thus making inclusivity at higher levels of education later on very difficult and almost impossible in a web-based education due to even lack of study equipment like the computers in addition to the teachers in mainstream institutions of learning not being trained to handle inclusive classes. By the time of this study, the first 2 cohorts of graduates who had attained the Bachelor of Inclusive Deaf Education degree from Uganda Martyrs University, the first of its kind in Uganda, were very few to pose a strong impact in all secondary schools in Uganda and unfortunately, administrators in some secondary schools were still adamant about admitting learners who were deaf in their mainstream secondary schools in addition to some administrators

refusing to recruit teachers specialized in the teaching of an inclusive deaf class not considering sign language as a teaching subject.

It was concluded that the proficiency that was required by the DHH for sign language usage in academia, was the same proficiency the DHH needed for Standard English usage if they were to competent favourably with the learners who were hearing regardless of whether they were in an inclusive deaf learning environment or a specialized one.

Recommendations

Basing on the interviews, questionnaire, observation and subsequent phone calls through which data were collected, below are the recommendations that were suggested by the respondents for meaningful deaf inclusion to be realized:

In the effort to promote a deaf inclusive web-based education, the Ministry of Education and Sports in Uganda was besought to establish laws specialized for deaf inclusion in main stream higher institutions of learning. With specialized deaf educational services piloted in mainstream higher institutions of learning, physical follow-up would be made easy for effective subsequent planning. Such a practice would automatically inform policy in the technical methodologies of paying attention to the promotion of visualization as to appeal to the sense of sight which is the major learning conduit for the DHH.

It was also suggested that policy and practice needed to facilitate inclusion both in and out of school. That a DHH with good knowledge of the sound-replacement language in this case sign language, public policy needed to ensure that such learners got the specialized attention and facilitation supervised by the education officers with background knowledge about the DHH community. It was added that in order to complete the cycle, the DHH needed to access supportive employment after school (give school a wide interpretation to include all education centers) to enable them prove their worth and also to avoid frustration on their side.

Policies for deaf inclusion in mainstream institutions of learning needed to be emphasized and that it was high time government started recruiting course instructors trained specifically to handle an inclusive deaf class of learners at secondary school level. By the time of this study, the biggest percentage of the first two cohorts of graduates from Uganda Martyrs University (remember Umu was the first institution of higher learning to offer a study program specialized in inclusive deaf education) was absorbed in private institutions and trying hard to be recruited in government secondary schools for which they were trained. Policies in support of special needs educations were in place but note that attention was paid to special needs in general yet for efficiency, specialized attention in specialized schools would serve the purpose much better than the blanket treatment of special education needs that was the case in Uganda by then.

If the DHH community was to be catered for effectively in Uganda, the respondents recommended the need to establish a policy of hearing screening to identify learners with hearing difficulties at the earliest possible. Such a practice would inform the education officers on what additional study mechanisms would be sought for to enable such learners cope up with the learners who were hearing that they studied with in the same learning environment for the case of this study in a web-based learning environment. Additional study mechanisms would include say:

signing the written and/or audio study material uploaded and/or accompanied the audio material with subtitles. Another additional study mechanism intervention would include the e-learning platforms such as zoom, Google meet, Google classes, among others every when used, could also be accompanied with captions at the real time of delivery important to note was that that required the course instructors clear and standard pronunciation of lexical items as not to confuse the learners who were DHH and only depended only on visual input.

It was also discovered that there was need to conduct a study to establish what happened to the DHH after primary school level. That was because there was a very small enrolment at secondary school level and a minute percentage in higher institutions of learning a case of study Uganda Martyrs University which was sampled. The situation was disheartening because, UMU even offered a full bachelor's program for teachers specialized in the teaching of an inclusive deaf class of learners; and there were course instructors also trained to teach the DHH in an inclusive learning environment but the population of the DHH was very low. It was upon that background that subsequent research was recommended to find out where the DHH disappeared to after primary school and the few after secondary school so as to establish the reason for their dropping out and how successful such DHH were after school at whatever level of education.

Deaf inclusive education proved possible in mainstream institutions of higher learning and also in a web-based education however, policy and practice needed to be at play under close supervision of the officers in charge of education at varying levels; and also there was need to recruit knowledgeable persons in specific areas of special needs such that policy making and implementation ensued from an informed point of view. However, that did not mean that Uganda was at zero level of inclusivity, nevertheless, more needed to be done especially in establishing specialized mainstream education inclusive centers to ensure efficiency and ease in promoting web-based education. The trend in Uganda by the time of this study was bundling all learners with special needs in one school labelled special needs school, yet the ideal would be establishing different schools each for a specific learning need from among the many different special learning needs learners went to school with.

In all, all respondents agreed that government needed to ensure availability of hearing gadgets to boost the DHH inclusion in the mainstream institutions of learning regardless of level in order to boost inclusivity of the deaf in mainstream institutions of learning.

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References

- Alanazi, M., 2021. Communicating with deaf Students in Inclusive Schools: Insights from Saudi University Faculty. *Journal of Educational Research* 95:188-209
- Baguma, A., Shahadat, H.K. and Che Kum, C. 2018. Integration of web-based learning into higher education institutions in uganda: teachers' perspectives. *International journal of web-based learning and teaching technologies* 13 (3).
- Baguma, R. and Wolters, M.K. 2021. Making virtual learning environments accessible to people with disabilities in university ies in Uganda. <http://doi.org/10.3389/fcomp.2021.638275>

- Crystal, D. 2010. *The Cambridge Encyclopedia of Language* (3rd ed.). Cambridge University Press
- De Jesus, O.N. 2012. Differentiated instruction: Can differentiated instruction provide success for all learners? *National Teacher Education Journal* 5 (3):5–11
- Deppeler, J., Loreman, T., Smith, R. and Florian, L. (Eds.). 2015. *Inclusive pedagogy across the curriculum. International Perspectives on Inclusive Education*. Bingley, U.K. Emerald Group Publishing
- Doherty, M. 2012. Policy and Practice in deaf education: Views and experiences of teachers and young people who are deaf in Northern Ireland and Sweden. *European Journal of Special Needs Education* 27 (3):281-299. <http://doi.org/10.1080/08856257.2012.678663/>
- Fisher, A.R. and Okonofua, J.A. 2017. The Importance of Inclusive Education: A Philosophical Analysis. *Journal of Philosophy of Education* 51 (2):350-367. doi:10.1111/1467-9752.12217
- Florian, L. 2015. Conceptualizing inclusive pedagogy: The inclusive pedagogical approach in action. *International perspectives on inclusive education* 7:11–24. London: Emerald Group Publishing.
- Florian, L. and Black-Hawkins, K. 2011. Exploring inclusive pedagogy. *British Educational Research Journal* 37 (5):813–828
- Florian, L. and Spratt, J. 2013. Enacting inclusion: A framework for interrogating inclusive practice. *European Journal of Special Needs Education* 28 (2):119–135
- Fromkin, V., Rodman, R. and Hyams, N. 2013. *An Introduction to Language* (10th ed.). Cengage Learning
- Gulliksen, J. Lillieskold, J. and Stenborn, S. 2022. The ‘New’ Normal – Digitalization and Hybridization of Work and Education Before, During and after the Covid-19 Pandemic. <https://doi.org/10.1093/iwc/iwac034>
- Harvard University, Division of Continuing Education. (n.d.). Creating Inclusive Environments. Retrieved from <https://www.extension.harvard.edu/professional-development/blog/creating-inclusive-environments/>
- Hassan, M. 2023. Secondary Data – Types, Methods and Examples. researchmethod.net/ Inclusive education in Uganda - examples of best practices: *Enable-Ed and USDC* march 2017. [Inclusive teaching practices /education.nsw.gov.au/](https://education.nsw.gov.au/)
- Jokinen, M. 2018. Inclusive Education – A Sustainable approach? *American Annals of the deaf* 163 (1): 70-77. <https://doi.org/10.1353/aad.2018.0012>
- Loreman, T., Deppeler, J.M. and Harvey, D.H.P. 2010. *Inclusive education: Supporting diversity in the classroom*. Sydney: Allen & Unwin
- Mike, O. 2004. *The Social Model in Action: If I had a Hammer*. Leeds: *The Disability Press*.
- Mike, O. 2023. *The Social Model of Disability*. 2nd ed. eBook ISBN 9781003178699. www.taylorfrancis.com
- Minna Moffatt-Feldman, 2013. The Inclusion of Deaf Pupils who use sign language in mainstream classrooms
- Nabulime, B. K.. 2019. Success and Challenges in the Reporting about the Situation of Persons with Disabilities in line with the SDGs: The Uganda Case. [/joyforchildren.org/](https://joyforchildren.org/)
- Nangonzi, Y. 2023. Uneb to Examine Candidates in Sign Language Starting Next Year: *The Observer*, February 21, 2023.
- New Vision. 2023. Special Needs Education Enrolment Increases, March 04 2023. [/www.newvision.co.org/](https://www.newvision.co.org/)
- NSPCC. 2012. An Introduction to child protection legislation in the UK. <http://www.nspcc.org.uk/inform/research/questions/child-protection-legislation-in-the-uk-pdf-wdf48953.pdf>. {10th January 2013}
- Pappano, L. 2011. Differentiated Instruction reexamined. *Harvard Education Letter* 27 (3):3-5
- Subotic and Andic. 2014. United Nations Convention on the Rights of Persons with Disabilities, 2016 quoted by Al-Shammari, Faulkner, and Forlin, 2019.
- Spectrum. 2018. Centre for Independent Living CIC: What is ‘the Social Model of Disability’? <http://spiritdisabilityplatform.wordpress.com>
- Transforming our world: The 2030 agenda for sustainable development, UN

Uganda Martyrs University, Annual report, 2019.

United Nations. 1993. World Plan of Action for Education on Human Rights and Democracy, Montreal. <http://un-documents.net/wpa-ehrd.htm>

UN World Population Prospectus, 2019 revision. Transforming education in Africa: an evidence-based overview and recommendations for long-term improvements

Wardhaugh, R. and Fuller, J.M. 2015. An Introduction to Sociolinguistics. John Wiley & Sons.

William, K.H. 2023. A guide on Primary and Secondary data-collection methods. University of Environment and Sustainable Development. www.jotform.com