FOSTERING THE DEVELOPMENT OF DIGITAL PEDAGOGICAL SKILLS OF TEACHER IN AFRICA: A CASE STUDY FROM TANZANIA

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Abstract

The concept of digital literacy and digital competence is conceptualized in the curriculum for compulsory education in the teacher education program. However, how the two terms are put into practice by the implementers remains to be unclear. The attention given to the two terms by the corresponding practitioners does not correlate to the increasing digital transformation to enable learners and educators positively adapt to changes in all areas of academic, social and individual life. This research analyses twofold: the level of digital competence of educators perusing Master of Education program, and their ability to design and use digital resources. The study employed a quantitative research approach to administering the digital competence self- assessment survey (DCSAS) on 64 Masters of Education educators. The statistics analysis measured were mean, standard deviation, frequencies and percentages. The findings indicate that the level of educators' digital competence including their understanding, using, finding and creating various information using digital technologies was moderate. Likewise, DCSAS results adequately explain that educators prefer the use of available digital resources mostly to prepare lesson notes, exams, students' grades and personal data; than creating their digital resources and monitoring students' activities and interactions in a collaborative online environment. Thus, understanding the factors that interplay with the educators' acceptance, preference and use of various digital technologies is important to inform the designing of the teacher education program to enhance the successful integration of technology in teaching and learning.

Key words: Digital competence, Digital literacy, digital resources and teacher education program

Introduction

The COVID-19 induced school lockdown saw countries adopt different measures to continue academic engagements while schools remained closed. This caused a rushed digitalization of education. The group most affected by the sudden switch to online school are the primary and secondary school teachers, with a greater demand on the latter (Jackman, Gentile, Cho, *et al.* 2021). During the emergency, we saw a first response to the provision of tools for remote or online learning before digital pedagogical trainings, if any, for teachers. This led to teacher's

unpreparedness for remote learning and the exposing of the widening digital skill gaps of African educators.

The Human Rights Watch (2020) conducted a study across various countries in Africa on the impact of COVID-19 on children's education, it cited among one of its major findings the need for digital literacy education, noting that this is increasingly recognized as an indispensable element of children's rights to education. To corroborate this, the E-learning Africa (2020) reports, based on the survey of 1650 respondents from 52 countries in Africa noted that, while the need for distance learning was clear from the onset of the pandemic, achieving effective reach was more complex. For the majority, the teachers had no prior experience teaching outside the classroom and using digital resources, while 71% of the respondents said they had no training prior to COVID-19 on how to adjust to providing distance-based learning for students. The report also noted that the main impediment for teachers was lack of appropriate training to design and manage distance learning program. (E- Learning Africa, 2020).

A review of recent studies that examined the impact of COVID-19 on the educational systems of Africa, show a common thread of unpreparedness of teachers to adjust to the need to provide distance-based learning for their students and this was primarily due to the lack of adequate professional development and trainings prior to COVID-19. (Human Right Watch, 2020;, OECD; 2020;, E-Learning Africa, 2020;, Olurinola, 2021;, Thorvaldsen & Madsen, 2021). This period exposed a digital pedagogical skill gap of African Teachers, highlighting the need not only for technological knowhow for our teacher but also an acquisition of technology pedagogical knowledge to address the need for today's and future classrooms.

There is a concern that this digital competency skill gap may worsen if we do not act now to address the problems and bridge the gap, not only for the now but for future emergencies. It is on this premise that this project, in collaboration with the ICT Research and Development Group of the IED-EA, Aga Khan University, Tanzania, aimed at evaluating the digital pedagogical competence of educators on the M.Ed program, to precede the implementing of innovative digital pedagogical trainings aligned with the digital pedagogical needs analysis and determining the impact of the trainings on the digital pedagogical competence and confidence of the teachers.

Teacher education programs are generally related to the development of teacher competence and proficiency that supports and empower the teacher to attain the requirements of the profession and face the challenges therein. Teacher education, also teacher training, are the rules, processes, and resources meant to provide teachers with the knowledge, attitudes, behaviours, and skills they need to do their jobs well in the classroom, school, and community. The curriculum, instructional tools, and faculty that contribute to the quality of instruction and the acquisition of information, skills, and competencies required for a professional teacher to perform effectively in public schools are referred to as a teacher education program. A general and professional education, as well as a specialization, is required for teacher education programs. Literature highlights that, although teacher education varies across countries, common patterns do emerge (Korthagen, 2010; Mgaiwa, 2018; Pereira, 2013). Similarly, Beauchamp et al. (2015) asserts that teacher education programs in most countries include initial teacher training, induction, continuing professional development reaching teachers at all levels of education namely pre-primary, primary, secondary, colleges and universities. Toohey and Smythe (2022) asserts that learners' needs vary in all levels of education; hence stage and level specific teacher preparation programs are paramount. Consequently, teacher education should be a prominent component of the entirety of organized education, including both formal and non-formal sub-systems.

According to Korthagen (2010), changes occur in the curriculum of most countries, ranging from the ground level reform initiated by small groups and institutions to restructuring of teacher education by policymakers. The reforms and curriculum changes are made to embrace and accommodate the diversified needs of both teachers and learners. In this matter, the Tanzania National Curriculum Framework for Basic and Teacher Education emphasizes the need for learning to be mediated by effective integration of technology into teaching-learning across learning areas (URT, 2019). The concept of digital competencies largely refers to skills, knowledge, creativity, and attitudes that is required to study and function in the knowledge society using digital media. Yet, the level of implementation of digital competence training is still a parable with multitude of misconceptions (E-Learning African, 2020). Morris (2020) asserts that digital pedagogy is largely misunderstood to be the transference of classroom pedagogy online. That is, digitizing whatever the teacher had employed in the classroom. He posits that there is a difference between digital pedagogy and teaching online and that digital pedagogy was not a mere

work of relocation but rather using the digital to innovate further, where digital pedagogue would work around limitations of digital platforms, using it as a portal to expand the learning environment and increase mindful teaching (Morris, 2020).

Reviewed literature has revealed the computer related courses to be more confined to administration purposes with limitation of basic ICT pedagogical skills (Kafyulilo, 2014; Mselle & Kondo, 2013; Mtebe & Twaakyondo, 2012; Njiku et al., 2021). In most cases ICTs have not been incorporated as a medium of instruction (Kafyulilo et al., 2015) but, only teaching learners on how to switch on and off the computer, orienting them the basic computer program of the Microsoft office such as Word, PowerPoint and Excel. In this regard, learners can also be taken through internet applications in areas where internet connection is not a problem (Kafyulilo, 2014). Nonetheless, the use of ICT in enhancing learning of subject content is noted to be minimum. Addressing the inadequacy in ICT integration in teacher education, the government through the ministry of education (MoEVT) initiated the Information, Communication Technology for teachers through professional development (ICT-TPD) framework (MoEST, 2017). The framework was meant to address the challenges related to ICT and technology in pre-service and in-service programs as well as the on-going learning of teachers.

The concepts of digital literacies and digital competence are conceptualized in curricula for compulsory education in the Teacher education program. Being digitally literate means being able to go through much information, the ability to understand a message and communicate it effectively to others in different formats. It also means creating, communicating and understanding when, if and how technology should be used to reach efficiently an objective, so digital literacy involves the use of technology. Carvarni et al (2008) states that digital competence is the ability to use and openness to new technological solutions in constantly improving ways. It comprises the ability to scrutinize, select, and critically evaluate information and data, as well as the ability to use technology to demonstrate and solve problems, develop shared and collaborative knowledge, and focus attention on personal commitments and that of others.

The origin of the competency-based teaching and learning method may be traced back to the social changes that have occurred over the last few decades. However, it has only been in the last few years that we have seen the rapid expansion of globalization which aided better advocacy of digital

literacy of teachers and students. Digital competence and digital literacy are interchangeably used because sometimes both concepts are used to underpin each other, such as in the EU framework of essential competencies for all citizens (European Commission, 2006), where digital competence is specified as one of eight important competencies. Teacher training programs need to equip teachers to use the technology innovatively, effectively, safely and ethically. Thus, providing teachers with sufficient digital competence is a key factor to be considered in teacher training programs. Teachers should possess and use Information Communication and Technology (ICT) skills not just at a basic level, but also utilize critical thinking and problem-solving skills and apply ethical knowledge. Basically, effective use of technologies for leisure, work and social inclusion are some of the tenets of digital competences training in teacher education programs.

According to Jorgen (2017) Digital pedagogical competencies is the capacity to continuously use the attitudes, knowledge, and abilities necessary to plan and conduct, as well as analyze and update ICT- teaching model, current research, and proven experience to support students. The primary attribute of digital pedagogical competence is the ability to develop/improve pedagogical work utilizing digital technology in a professional setting (Maussumbayev, Toleubekova, Kaziyev, Baibaktina, & Bekbauova, 2022). In contemporary society where education demands active and participatory educational models, digital pedagogical competence has risen to prominence in the educational context, becoming one of the main competences that teachers must master. The prevalent implementation of digital technology in professional and everyday life has increased the need for future teachers to be trained in order to prepare the next generation to participate effectively in modern society. Acquiring digital pedagogical competence is one of the vital competences that are necessary for lifelong learning, it is therefore imperative to understand the factors that interplay with the educators' acceptance, preference and use of various digital technologies as this information is key to informing the designing of the teacher education program to enhance the successful integration of technology in teaching and learning.

Numerous efforts including formulation of models, frameworks, and literacies have been devoted over the years to enable the integration of technology in teaching and learning as results develop the needed digital competencies in today's emerging technology and future classrooms. Yet,

literature and experience show that the professional learning provided to educators does not efficiently enable them to acquire the digital pedagogical competencies required to take forward learning (Yazon et al., 2019; Esteve-Mon et al., 2016; Ghomi & Redecker, 2019). When the training needs are not identified, the desired digital pedagogical and instructional purposes are not met. With this context, therefore, the DCSAS was designed and administered to M.ed educators to establish their level of digital competence and determine the training needs before the implementation of the UNESCO MGIEP course.

Research Questions

This research addressed the following questions

1. At what level do educators use digital technologies in their professional practice?
2. What are the identified digital pedagogical gaps and training needs of the teachers?

Methodology

The study employed a quantitative research approach in a positivist philosophical worldview (Gray & Webb, 2012; Hothersall, 2019) to establish the educators' digital pedagogical competence levels and their training needs. The study involved 64 educators who were enrolled for M.ed at the Aga Khan University in the year 2022/2023 selected to participate in the UNESCO Digital Teachers courses as an intact class. Among the 64 educators, 42 (66.5%) were male and 20 (33.5%) were female and were enrolled on ICT in Education course as an intact class. The participants were from the three East African countries i.e., 17 (27.1%) from Tanzania, 38 (65.5%) from Kenya and 9 (11.9%) from Uganda. In addition, the participants had a mean age of 39 years and an average of 13 years of teaching experience at levels such as 6(8.5%) Primary (grades K - 2), 9 (13.6%) Middle School (grades 6 - 8), 24 (39.0%) High School (grades 9 - 12), 12 (18.6%) Higher / Professional education. The other 9 (13.6%) were teaching at the K-12 level while the other 4 (6.8%) course participants did not specify the levels they teach.

A competency level rating scale (DCSAS) was administered to the selected participants where all the items were designed as a Likert scale based on the competencies to be developed. This instrument was the Selfie For Teachers, a self-evaluation instrument created by the (Ghomi &

Redecker, 2019) based on the DigCompEdu framework, teachers can test their digital competence, reflect on their digital capabilities, and determine their training and professional development needs. The development of the tool was guided by three principles: (i) to condense and simplify the framework's key concepts; (ii) to translate competence descriptors into concrete activities and practices; and (iii) to provide targeted feedback to teachers based on their level of competence for each of the 22 indicators. Each item comprises a statement expressing the core of the competence in tangible, practical statements, as well as three to five possible responses that are cumulatively structured and mapped to the proficiency levels. Then, a response that best matches the focus of this research werechosen (Abbott, 2011) and checked for content validity thereafter(Reid et al., 2014).

The data were descriptively analyzed to obtain mean, standard deviations, frequencies and percentages guided by (Pallant, 2020). First, the mean and standard deviation were computed to deduce the general overview of the educators' digital pedagogical competence. Then, the frequencies and the percentages for each parameter included in the DCSAS were calculated to interpret the level of participants' digital pedagogical competence and training needs.

Table 1: Educators' digital competence level in terms of mean and standard deviation

S/No	Rating Parameters	Mean	SD	Rank
1	I use different internet sites and search strategies to find and select a range of different digital resources	1.94	1.052	Moderate
2	I create my own digital resources and modify existing ones to adapt them to my needs	2.34	0.996	Moderate
3	I effectively protect sensitive content; e.g. exams, students' grades, personal data	2.31	0.871	Moderate
4	I carefully consider how, when and why to use digital technologies in teaching, to ensure that they are used with	1.73	0.696	Moderate
5	I monitor my students' activities and interactions in the collaborative online environments we use	1.81	0.924	Moderate
6	When my students work in groups or teams, they use digital technologies to acquire and document evidence	1.97	0.959	Moderate
7	I use digital technologies to allow students to plan, document and monitor their learning themselves; e.g. quizzes for self-	2.23	0.955	Moderate
8	I use digital assessment formats to monitor student progress	2.73	0.859	High
9	I analyze all data available to me to timely identify students who need additional support; "Data" includes: students'	1.88	1.031	Moderate
10	I use digital technologies to provide effective feedback	2.59	0.849	High
11	When I create digital assignments for students I consider and address potential digital problems; e.g. equal access to digital devices and resources; interoperability and conversion problems; lack...	1.63	0.826	Moderate
12	I use digital technologies to offer students personalized learning opportunities; e.g. I give different students	2.20	1.086	Moderate
13	I use digital technologies for students to actively participate in classes	2.36	0.861	Moderate
	OVERALL	**2.132**	**0.920**	**Moderate**

Legend: 2.50 – 3.00 – High; 1.50 – 2.49 – Moderate; 1.00 – 1.49 – Low

Results and Discussion

This work presents the need assessment results obtained from DCSAS that was administered before the implementation of the UNESCO MGIEP digital teacher course. The DCSAS was conducted to assess Med educators' level of digital competence i.e., knowledge, skills and digital gaps in using digital tools and creating digital resources. **Table 1** presents the results of how the educators rated themselves in various parameters. The overall mean and standard deviation were ($\chi = 2.132$; SD = 0.920) which indicates the average digital competence. As presented in **Table 1** the educators were seen to be quite competent in using different internet sites and search strategies

to find different digital resources, create their digital resources, understand how to protect important content and know how to use digital resources. Moreover, the educators revealed that they can monitor students' interaction through an online environment, use digital assessment formats to assess students' progress and later provide feedback to them. They also revealed to have limited competence to address potential digital problems and ability to analyze digital data.

Table 2: Factored rating parameters based on the CB lesson stages in terms of mean and standard deviation

The aspect of CB lesson	Parameter's number	Average Mean	Average SD	Rank
Preparation/planning	1, 2, 11	1.97	0.958	Moderate
Implementation	4, 5, 12, 13	2.025	1.142	Moderate
Assessment	3, 6, 7,8,9	2.224	0.935	Moderate
Feedback	10	2.59	0.885	High

Legend: 2.50 – 3.00 – High; 1.50 – 2.49 – Moderate; 1.00 – 1.49 – Low

The results in this analysis were factored further into the four aspects of a competence-based (CB) lesson i.e., lesson preparation, implementation, assessment and feedback stages as seen in **Table 2**. Items 1, 2 and 11 were factored in the first stage with (χ = 1.97; SD = 0.958), items 4, 5, 12 and 13 factored in the second stage with (χ = 2.02; SD = 1.14), items 3, 6, 7, 8, and 9 were factored in the third stage with (χ = 2.22; SD = 0.935) and item 10 was the only item factored in the fourth stage with (χ = 2.59; SD = 0.88). The average mean and standard deviation obtained for the first three stages was noted to be moderate level which implies that the educators were quite competent in the application of digital skills in the first three stages of a CB lesson. The fourth stage exhibited high average mean and standard deviation which implies that the educators were highly competent in the aspect of giving feedback using digital technology.

Table 3: The frequencies and percent of all the items on the rating parameters falling on the CB lesson preparation stage

Rating Parameter	Sub-rating Parameter	Frequency	Percent	Rank
I use different internet sites and search strategies to find and select a range of different digital resources	"I evaluate and select resources on the basis of their suitability for my learner group"	31	48.4	Moderate
	I compare resources using a range of relevant criteria, e.g. reliability, quality, fit, design, interactivity, appeal	12	18.8	Low
	I only rarely use the internet to find resources	15	23.4	Low
	I advise colleagues on suitable resources and search strategies	6	9.4	Low
I create my own digital resources and modify existing ones to adapt them to my needs	I do not create my own digital resources	14	21.9	Low
	I do create lecture notes or reading lists with a computer, but then I print them	23	35.9	Moderate
	I create digital presentations, but not much more	19	29.7	Moderate
	I create and modify different types of resources	7	10.9	Low
	I set up and adapt complex, interactive	1	1.6	Low
When I create digital assignments for students I consider and address potential digital problems; e.g. equal access to digital devices and resources; interoperability and conversion problems; lack...	I do not create digital assignments;	38	59.4	High
	I discuss possible obstacles with students and outline solutions	12	18.8	Low
	I allow for variety, e.g. I adapt the task, discuss solutions and provide alternative ways for completing the task;	14	21.9	Low

Legend of Ranking: 50 – 100 – High; 25 – 49 Moderate; 1 – 24– Low

Further, the analysis was done on the items falling under each analysis parameter and the results are presented based on the items indicated in each step of a CB lesson. The frequencies and percentages for the items included in the preparation/planning of the CB lesson are presented in **Table 3**. The results indicated that 31 educators (48.4%) evaluate and select resources based on their suitability and 15 (23.4%) confessed to rarely using the internet to find resources. This finding is contrary to the findings of Yazon et al.(2019) who found that the educators were competent and preferred finding information online. Further, 23 educators (35.9%) highlighted creating lecture notes and reading lists using computers and 19 educators (29.7%) only end up on creating digital presentations. This finding is in line with the finding that the majority of participants exhibited

excellent competence in creating and formatting documents as well as generating tables, pictures and images(Shopova, 2014). Based on the highlighted aspects of digital resources in the DigCompEdu, the results revealed that educators still needed professional learning programs for the selection, creating and modifying as well as managing and sharing of digital resources(Ghomi & Redecker, 2019).

Table 4: The frequencies and percent of all the items on the rating parameters falling on the CB implementation stage

Rating Parameter	Sub-rating Parameter	Frequency	Percent	Rank
I carefully consider how, when and why to use digital technologies in teaching, to ensure that they are used with	I do not or only rarely use technology in class	26	40.6	Moderate
	I make basic use of available equipment, e.g. digital whiteboards or projectors	29	45.3	Moderate
	I use digital tools to implement innovative pedagogic strategies	9	14.1	Low
I monitor my students' activities and interactions in the collaborative online environments we use	I do not monitor student activity in the online environments we use	31	48.4	Moderate
	I regularly monitor and analyze my students' online activity	17	26.6	Moderate
	I occasionally check on them and their discussions	13	20.3	Low
	I regularly intervene with motivating or corrective comments	3	4.7	Low
I use digital technologies to offer students personalized learning opportunities; e.g. I give different students	I do provide students with recommendations for additional resources	24	37.5	Moderate
	In my work environment, all students are required to do the same activities, irrespective of their level	11	17.2	Low
	Whenever possible, I use digital technologies to offer differentiated learning opportunities	21	32.8	Moderate
I use digital technologies for students to actively participate in classes	I systematically adapt my teaching to link to students' individual learning needs, preferences and interests	8	12.5	Low
	In my work environment it is not possible to actively involve students in class	9	14.1	Low
	When instructing, I use motivating stimuli, e.g. videos, animations, cartoons	30	46.9	Moderate
	I do involve students actively, but not with digital technologies	18	28.1	Moderate
	My students engage with digital media in my classes, e.g. electronic worksheets, games, quizzes	7	10.9	Low

Legend of Ranking: 50 – 100 – High; 25 – 49 Moderate; 1 – 24– Low

Similarly, **Table 4** indicates that 26 (40.6%) educators were not or rarely used digital technology in class, and 29 (45.3%) educators were capable of making basic use of available digital equipment like projectors and whiteboards. They also highlighted that they were not monitoring students' activie 4ties in an online environment 31 (48.4%). Meanwhile, 24 (37.5%) educators confessed to giving their students recommendations for additional resources, and 21 (32.8%) educators highlighted that they use digital technologies to offer differentiated learning opportunities whenever possible. In addition, 30 (46.9%) educators rated themselves to use motivating stimuli, e.g. videos, animations, and cartoons when instructing. Again, 18 (28.1%) educators agreed to involve students actively during the teaching and learning process, but not with digital technologies. All these findings imply that the educators demonstrated quite a competence in preferring the engagement of their students in the use of digital resources than it was to them. Thus, these findings called for more professional learning programs which can develop educators' competencies in the use of digital resources and not only availing the resources to their colleagues and students.

Table 5: The frequencies and percent of all the items on the rating parameters falling on the CB assessment stage

Rating Parameter	Sub-rating Parameter	Frequency	Percent	Rank
I effectively protect sensitive content; e.g. exams, students' grades, personal data	I do not need to do that, because the department takes care of this	6	9.4	Low
	I password protect some personal data	43	67.2	High
	I avoid storing personal data electronically	4	6.3	Low
	I comprehensively protect personal data, e.g. combining hard-to-guess passwords with encryption and frequent software	11	17.2	Low
When my students work in groups or teams, they use digital technologies to acquire and document evidence	Not possible in my work environment	18	28.1	Moderate
	Sometimes I use, for example, quizzes for self-assessment	18	28.1	Moderate
	My students do reflect on their learning, but not with digital technologies	23	35.9	Moderate
	I systematically integrate different digital tools to allow learners to plan, monitor and reflect on their progress	5	7.8	Low
I use digital technologies to allow students to	Not possible in my work environment	18	28.1	Moderate
	Sometimes I use, for example, quizzes for self-assessment	18	28.1	Moderate

plan, document and monitor their learning themselves; e.g. quizzes for self-	My students do reflect on their learning, but not with digital technologies	23	35.9	Moderate
	I systematically integrate different digital tools to allow learners to plan, monitor and reflect on their progress	5	7.8	Low
	I do not monitor students' progress	5	7.8	Low
I use digital assessment formats to monitor student progress	Sometimes I use a digital tool, e.g. a quiz, to check on students' progress	18	28.1	Moderate
	I do monitor students' progress regularly, but not with digital means	31	48.4	Moderate
	I use a variety of digital tools to monitor student progress	9	14.1	Low
	I systematically use a variety of digital tools to monitor student progress	1	1.6	Low
I analyze all data available to me to timely identify students who need additional support; "Data" includes: students'	I only analyze academically relevant data, e.g. performance and grades	27	42.2	Moderate
	I also consider data on student activity and behaviour to identify students who need additional support	26	40.6	Moderate
	I systematically analyze data and intervene in a timely manner	6	9.4	Low
	These data are not available and/or it is not my responsibility to analyze them	2	3.1	Low
	I regularly screen all available evidence to identify students who need additional support	3	4.7	Low

Legend of Ranking: 50 – 100 – High; 25 – 49 Moderate; 1 – 24– Low

As shown in **Table 5**, the majority of the educators i.e., 43 (67%) mentioned effectively protectingsensitive content like exams, students' grades and personal data by using the password. In the other attempt 18 (28.1%) educators mentioned that students' effective use of digital technology when doing various activities in groups or teams is not possible in their working environment. This is perhaps because most the learning environments lack facilities that can enhance learning using technology (Kafyulilo, 2014; Pates & Sumner, 2016). Easily accessible gadgets like a mobile phone that the majority of students of this era has are still strictly prohibited to be seen in the classroom environment (Njiku et al., 2019, 2021). Moreover, a digital network that could enhance both teacher's and student's easy interaction at the same time is yet to be integrated into ordinary classrooms(Mtebe & Raphael, 2018). Again, 18 (28.1%) educators highlighted that they sometimes use digital assessment for their students like quizzes for self-assessment. Additionally, 23 (35.9%) educators agreed that their students do reflect on their learning but not using digital technologies, and 31 (48.4%) educators monitor students' progress but not with digital resources. This finding did not only indicate limited access to digital technology by the educators but also the training on its use. Similar concern has been raised by

other scholars. For instance, it has been seen that poor integration of technology in training colleges affects further technological integration in schools (Njiku et al., 2021; Pates & Sumner, 2016). It is important, therefore, to improve technologyintegration and training for educators to address the issues related to technologyintegration in a classroom environment.

On the issue of analysis of academic data, Table 5 indicates that 27 (42.2%) educators highlighted that they only analyze relevant data like performance and grades. Moreover, 26 (40.6%) educators rated to consider data from students' various activities to identify the students who need additional support. Students' assessments should not solely end only on classroom activities, performance and grades(Pettersson, 2018). Kaya-Capocci et al.(2022)argued that the use of formative assessment that has all features of a digital learning environment can the assessment of students' progress. According to them, this kind of assessment is effective when digital technology and digital assessment are drawn together. The commentators like Bearman et al.(2022) mentioned that instant and effective formative digital assessment through course management systems and virtual learning environmentslikeEdmodo, Moodle, Pocket Study, Canvas, Edsby, and WebCT and classroom response systems can help to improve teachers digital pedagogical practices. With clickers, student response systems, personal response systems, audience response systems, and classroom performance systemslikeSocrative, Kahoot!, and Plickers, students' participation can be improved, save time, give students equal participation opportunities, and create fun and exciting learning environment (Kaya-Capocci et al., 2022). This result ignites the educators' professional learning on aspects of effective formative digital assessment.

Table 6: The frequencies and percent of all the items on the rating parameters falling on the CB feedback stage

Rating Parameter	Sub-rating parameter	Frequency	Percent	Rank
I use digital technologies to provide effective feedback	Sometimes I use digital ways of providing feedback, e.g. automatic scores in online quizzes, comments	12	18.8	Low
	I use a variety of digital ways of providing feedback	5	7.8	Low
	I do provide feedback to students, but not in digital format do provide feedback to students, but not in digital format	44	68.8	High
	I systematically use digital approaches to provide feedback	3	4.7	Low

Legend of Ranking: 50 – 100 – High; 25 – 49 Moderate; 1 – 24– Low

Generally, it can be noted from the results in **Table 6** that most educators 44 (68.8%) provide feedback to their students but not a digital format of feedback. It was also noted that some educators 12 (18.8%), sometimes use digital ways of providing feedback like automatic scores in online quizzes and comments. This result strikes how little attention is given to feedback by educators. Feedback as a consequence of performance has a large effect on students' learning (Tärning, 2018). Students should often receive feedback as the measure of the quality of their actions in various classroom activities, tests, quizzes and exams (Maier & Klotz, 2022). However, effective feedback does not only focus on errors which is the common practice by most educators (Caena & Redecker, 2019). According to Lee & Cha(2022)when feedback is effectively done it can provide the students with encouragement, corrective information, clarification of ideas, provide alternative strategies, and provide the students with accuracy regarding their responses.Feedback which has information about the task/activity i.e., how to do it more effectively supports learning (Tärning, 2018) and enables learners to achieve their learning goals (Langenfeld et al., 2022). All this evidence and the finding on the educators' practice in giving feedback suggested training which may develop their competence in giving effective feedback using digital technology.

Despite the overall mean and standard deviation to have shown moderate educators' digital competence, further analysis of each item for all rating parameters gave insight into the level of the educators' competence to still be low. This is to say that increasing educators' competence in understanding, finding, creating, and using information through digital technologies is paramount (Yazon et al., 2019). Likewise, the educators exhibited only basic skills like the use of videos, animations, use of projectors and whiteboards, and putting passwords on their gadgets to protect education-related information. This level of competence is considered to be only ICT integration skills (Nowak, 2019) which calls for more advancement of these skills to attain the desired digital pedagogical literacy and competence. Reflecting on the results the educators revealed the spirit of sharing their digital competencies with their colleagues and students, which may hinder the authenticity of what is shared with low competence (Ghomi & Redecker, 2019).

With all the deduced findings, the study recommends the following; continuous implementation of the UNESCO MGIEP to M.Ed educators can highly bridge the gap between the basic use of ICT in teaching and learning and the development of educators' digital pedagogical and instruction

competencies. The training implementation should go hand in hand with the measure of educators' confidence in the use of digital technology as well as searching and designing digital resources.

Conclusion

The digital pedagogical landscape is ever evolving, and if African is to meet the current demands from our educational systems, it's imperative to shift focus from just ICT skills training for teachers. While it is important to know how to use digital technology, it is significantly important as well, to know how to use it pedagogically. The results of this study show the need for teachers to increase their digital competence level through specific training, especially as regards the pedagogical use of technology, more practical, experimental training. As African educators, we need to work more systematically at local levels to increase the repertoire of effective pedagogical use of ICT. It is our hope that this project would help provide the data needed to address the urgent need for a digital pedagogical skills education for teachers in Tanzania and the different regions of Africa. In addition, hopefully, it will provide guidelines for policies and coordinated response that would help these teachers acquire the needed skills to keep pace with the digitally evolving educational landscape.

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