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Integrating of the UNESCO Digital Teacher Course in the Teacher Education Program: A Case of AKU-IED Med Program

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Abstract

Purpose: This study planned to explore the effect of the UNESCO advanced educator course in the M.Ed. instructor training program at the Aga Khan College, Dar es Salaam specifically on digital pedagogical competency.

Methodology: The research study employed a pre-experimental research design and fifty-nine (59) Aga Khan University M. Ed Education students from the three East African countries were involved. The research instruments involved in this study include a competency level rating scale (SelfieForTeachers) and a pre-post-training survey.

Findings: The findings revealed the influence of the UNESCO Digital Teacher course on enhancing participants' digital pedagogical competencies, with a specific emphasis on their familiarity with advanced devices and the creation and utilization of computerized assets for teaching. Besides, a smaller advancement in the utilization of digital resources and video conferencing tools was noted among the educators which highlights areas that may benefit from further refinement in future versions of the course.

Unique Contribution to Theory, Policy and Practice: These findings provide valuable perspectives in the ongoing dialogue on enriching educators' digital skills through focused professional development opportunities.

Keywords: *Digital Teacher, Teacher Education, Digital Teacher, Pedagogical Competencies, Peer Learning, Professional Practice*

1. Introduction

Education is universally considered one of the agents of sustainable change and significant social, political, economic and cultural practices in the globalized modern world. However, the provision of quality education has become a point of concern in recent decades to bridge the gap related to the prosperity and development of societies in a global environment (Kalolo, 2015; Korthagen, 2010). This is because, employing high-quality education the needed lifelong transferable skills and competencies can easily be acquired, developed and renewed (Mizova et al., 2021). According to them, the expectations of young people in modern society, and future generations as well, include knowledge, skills and attitudes to enhance teamwork and collaboration, and abilities for critical, complex problem-solving. Similarly, in-depth and analytical thinking predetermines a proactive, creative and innovative attitude as well as behaviour toward the surrounding reality (Reeves, 2009). Therefore, an indisputable imperative is to create a generation with sophisticated competencies that can meet global learning demands.

1.1 *Statement of Problem*

Over time, numerous frameworks, models, and literacies have been created to assist teachers in acquiring the digital skills necessary to use new and developing technologies in the classrooms of the present and the future. Existing research indicates, however, that the present emphasis on providing technical and informational skills training for educators does not effectively empower them with the digital pedagogical skills required in today's classrooms and beyond (Yazon et al., 2019; Diz-Otero et al., 2022; Nowak, 2019; Spante et al., 2018). Aside from addressing the roles and practices of educators in a technology-supported learning environment (Njiku et al., 2019), few frameworks have focused on assessing the digital pedagogical skills of educators (Mtebe & Kondoro, 2016). Teachers who are not trained or exposed to digital technologies for pedagogy frequently employ technology for very specific goals, like online communication and improved content representation. (UNESCO MGIEP 2020). From the available literature, it can be deduced that research assessing the digital pedagogical skills of educators considering the technological advancement in education is lacking (Ghomi & Redecker, 2019; Meirovitz, Russak, & Zur, 2022; Ryhta et al., 2020). Given this background, it is essential to investigate the extent of digital pedagogical competence among educators and how these competencies can be developed. This is a research need given the important role educators play in preparing future professionals for the future workplace.

1.2 *Research questions*

The following questions**:**

1. What is the impact of digital technologies on educators' professional practice?
2. What is the impact of the UNESCO digital teacher course on educators' familiarity with the selection and use of digital resources?
3. What is the impact of the UNESCO digital teacher course on educators' peer learning?
4. What is the impact of online classes on educators' digital pedagogical competence?

1.3 *Research Hypothesis*

H_1. The use of digital technologies has a positive impact on educators' professional practice.

H_2. Implementation of the UNESCO digital teacher course has an impact on educators' familiarity with the selection and use of digital resources.

H_3. UNESCO digital teacher course affects educators' peer learning.

H_4. Implementation of online classes has an impact on educators' digital pedagogical competence.

1.4 Literature Review

1.4.1 *Digital Competences Training in Teacher Education Program*

The teacher education curriculum for required education in the Teacher education program conceptualizes the terms "digital literacies" and "digital competence". Digital literacy means the ability to go through digital information, comprehend its message and communicate it effectively to others in different formats. Tabieh et al. (2021) highlight that digital literacy means utilizing technology to comprehend, create, and communicate technology efficiently. Besides, according to (Ghomi & Redecker, 2019), digital competence includes the ability to use an individual's openness to new technological solutions in constantly improving ways. Furthermore, according to Spante et al. (2018), digital competence includes the capacity to choose, examine, and critically assess data to derive relevant knowledge. As a result, the terms "digital literacy" and "digital competence" refer to the capacity to use digital technology for problem-solving, the creation of shared and collaborative information, and the demonstration and focus on one's own and others' commitments.

Furthermore, the impact of the rapid expansion of globalization which aided better advocacy of both teachers' and students' digital literacy can be seen in the last few years. However, the

implementation of competency-based teaching and learning methods may also be traced back to the changes that have occurred over the last few decades (Caena & Redecker, 2019). Since both ideas are occasionally used to support one another, digital literacy and competence are sometimes used interchangeably. This is particularly true in the EU framework of fundamental competencies for all people (Redecker, 2017), where digital competence is listed as one of eight crucial competencies. Additionally, teacher preparation programs should equip educators to use technology in a safe, inventive, ethical, and efficient manner.

Moreover, the prevalent implementation of digital technology in professional and everyday life has increased the need for future teachers to be trained to prepare the next generation to participate effectively in modern society. Effective use of technologies for social interactions, leisure, and work are some of the tenets in the training of digital competencies in teacher education programs (Spante et al., 2018). Likewise, the provision of sufficient digital competence to educators is a vital factor to be considered in teacher training programs (Ghomi & Redecker, 2019). Besides, digital pedagogical competence has risen to prominence in the educational context, becoming one of the main competencies that educators must master in contemporary society where education demands active and participatory educational models. Thus, acquiring digital pedagogical competence is one of the vital competencies that are necessary for educators' lifelong learning.

1.4.2 *The UNESCO MGIEP Digital Teacher Course.*

The Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP), a Category 1 Research Institute of UNESCO, is dedicated to achieving Sustainable Development Goal (SDG) 4.7, which is education for the construction of peaceful and sustainable societies worldwide. The Institute's programs and products are made to transform education into humanity in mind. They are made to take advantage of learning science, develop innovative digital pedagogies, and mainstream social and emotional learning (SEL) in educational systems (UNESCO MGIEP 2020). The institute introduced The Digital Teacher credential program in 2020 to improve teachers' proficiency with digital pedagogy.

The Digital Teacher course is a self-paced online open-license certificate course for aspiring and in-service teachers. The purpose of the course is to inspire and enable teacher-learners to leverage current and emerging digital tools to enhance their professional practice and become 21st Century Teachers who are Leveraging digital pedagogies for teaching practice. The course enables participants to utilize digital technology to create learning experiences that are relevant, authentic, and engaging. With its focus on digital pedagogies, the course encourages teachers not just to learn

digital technologies but also to critique them from a pedagogical perspective. This entails the intentional use of technology through the application of learning design principles for achieving learning goals. The course uses the principles of nonlinear learning and the Universal Design of Learning to address learner variability and student diversity (Caena & Redecker, 2019).

The learning objectives of the course correspond to four global standards of digital competencies for educators: the International Society for Technology in Education Standards for Educators, the UNESCO: ICT for Competency Framework for Teachers, the EU standard (DigCompEdu), and the Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2. By the end of this course, it is expected that educators will have a better understanding of how digital tools can support teaching and learning to communicate, connect, and collaborate using tools processes and technologies. They would be able to use design principles to integrate digital tools into lessons, to participate actively, efficiently and securely online, and to employ pedagogies and assessments that empower learners and support and include diverse students using digital pedagogies.

Digital Teacher course is considered a unique offering because: It promotes digital pedagogy beyond ICT Skills; It encourages modelling and active learning; It conforms to international standards; Four international standards for digital competencies are matched with the course's learning outcomes; It enables quick access to resources and tools. With permanent access to the course, participants will have tools, templates, and digital resources at their disposal.

1.5 *Theoretical Framework*

Many frameworks are predicated on the development of abilities and the capacity to utilize a certain collection of tools and/or applications. A digitally fluent educator can design learning using technology and guide learning using appropriate digital pedagogies in all learning contexts and modes (Howell, 2012; Kivunja, 2016; McKnight et al., 2016). While the curriculum of many current teacher educators focuses on Pedagogy Content Knowledge (PCK) content (Shulman, 1986), it omits the technology Pedagogical Content Knowledge (TPCK) portion that includes digital fluency (Mishra & Koehler, 2006). While PCK is still necessary for teacher education, the acquisition of the technology component of TPACK through relevant Continuous Professional Development (CPD) may be crucial for teacher educators, sometimes known as digital immigrants (Wang et al., 2013). This will empower them to utilize technology as a teaching and learning tool efficiently.

Figure 1 illustrates the knowledge structures that underlie a significant portion of the present discussion on educational technology. Put another way, technology is seen as a distinct set of

knowledge and abilities that need to be learned, and the connection between these abilities and the tried-and-true foundation of instruction (content and pedagogy) is either seen as nonexistent or as something relatively simple to learn and apply. The design and implementation of workshops or teacher training programs that stress the learning of hardware and software competencies as sufficient to complete educators' knowledge bases for teaching using technology will be directly impacted by this viewpoint. Therefore, it may be inappropriate to separate technological knowledge from pedagogical and content knowledge.

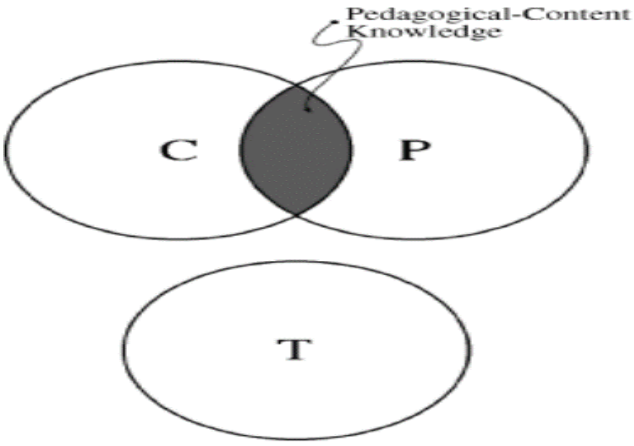

Fig 1. The Three Circles Represent Pedagogy, Content, and Technology Knowledge.

Content and Pedagogy Overlap to Form Pedagogical Content Knowledge While Technology Is Seen as Being a Separate and Independent Knowledge Domain

The TPCK paradigm (Figure 2) emphasizes the connections, interactions, affordances, and constraints among and between content, pedagogy, and technology, in contrast to the oversimplified view of technology (Figure 1). This method emphasizes that developing good teaching requires a thorough understanding of content (C), pedagogy (P), and technology (T).

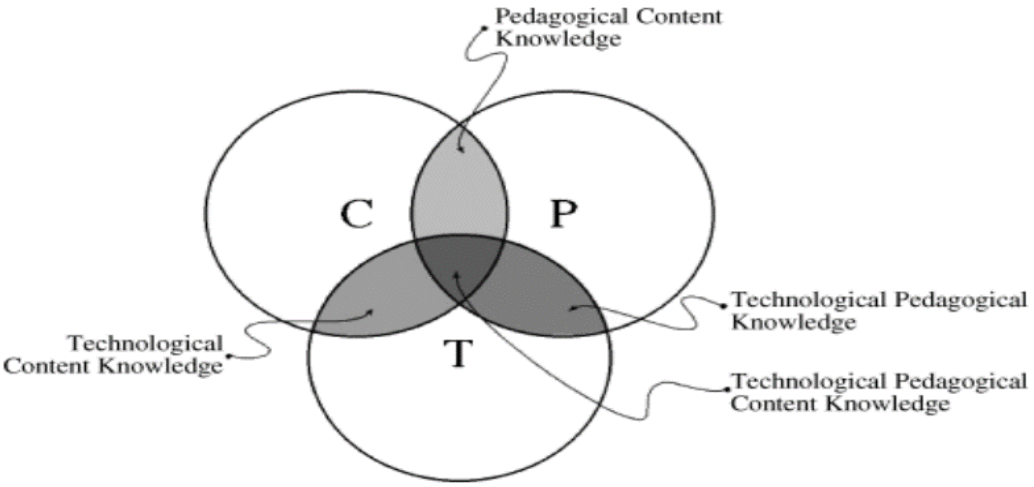

Figure 2. Pedagogical Technological Content Knowledge. Source (Mishra and Koehler, 2005).

Four further types of connected knowledge are produced by the overlap of the three circles—content, pedagogy, and technology. Nevertheless, this approach emphasizes the complex interactions among these three sources of knowledge rather than regarding them as separate bodies of knowledge.

DigCompEdu, the European Framework for the Digital Competence of Educators, is in line with the TPACK framework. The 2017 publication DigCompEdu outlines the digital capabilities unique to the teaching profession and aims to identify pedagogical and professional focus areas for the integration of technology into teaching and professional practice. Whereas TPACK fails to explain how this connection is made (Redecker, 2017). The foundation of the DigCompEdu framework consists of the pedagogically significant integration of technology into instruction in areas 2 through 5.

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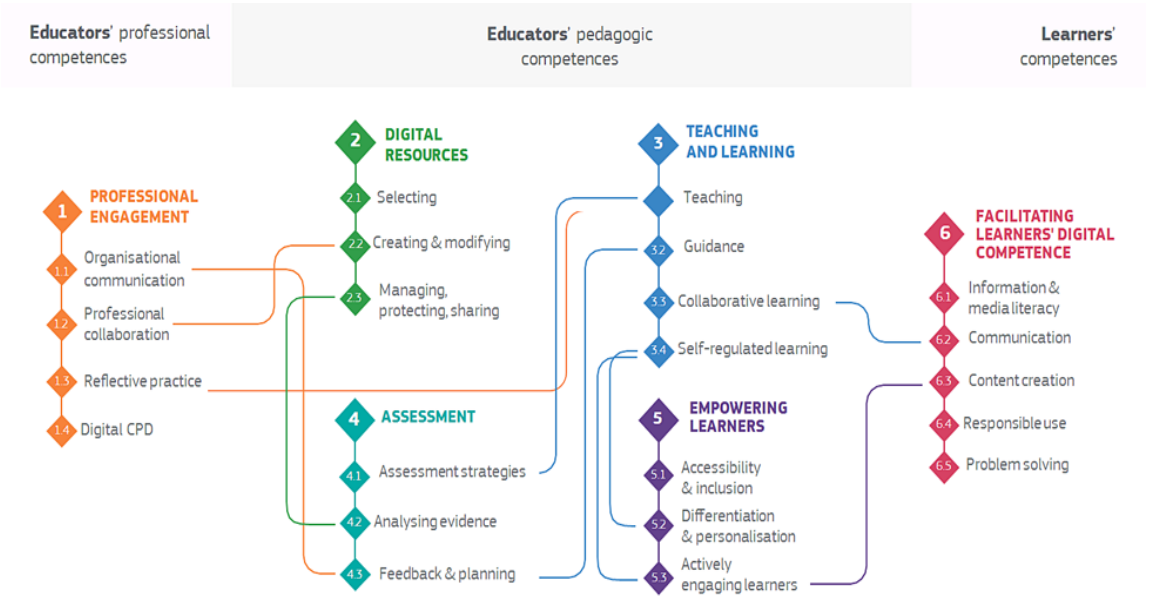

Figure 3: Overview of the DigCompEdu framework. (Redecker, 2018)

The production, modification, management, and selection of digital educational resources are within the purview of Area 2, Digital Resources. This also entails making sure that digital resources are created and published in a way that complies with copyright and data protection regulations. The organization, planning, and management of the integration of digital technology into classroom instruction fall within the purview of the third domain, Teaching and Learning. By transforming educational processes and activities from teacher-led to learner-centered, it focuses on the integration of digital resources and approaches to promote collaborative and self-regulated learning processes. Area 4, Assessment, focuses on the basic use of digital technology to review the current performance data thoroughly, assess student performance and learning needs, and provide learners with more immediate and individualized feedback. Since the theme of Area 5 is Empowering Learners, the framework places a strong emphasis on the importance of creating learning experiences and activities that consider students' needs and allow them to actively advance along their learning path.

DigCompEdu gives teachers an overview of how to pedagogically integrate subject-specific teaching competency (as defined by curriculum) with technical competence (as defined by DigComp) to give students more engaging, effective, and individualized learning opportunities. Rather than technical or general digital abilities, the DigCompEdu structure focuses on the teaching component. It describes how educational processes can be modified using digital technology, placing pedagogical and methodological considerations at the center of the framework.

Pedagogic Competencies 2, 3, 4, and 5 of Educators, as shown in Figure 3, would be the main emphasis of this study.

2. **Methodology**

2.1 *Research design*

The study employed a pre-experimental research design both in data collection and analysis procedures. In which a single group (Bin-Hady et al., 2020) of M.Ed students went through a pre-test survey before going through a UNESCO MGIEP Digital Teacher Course to investigate the level of their digital pedagogical skills and competencies. In addition, the participants went through a post-test survey at the end of the course to check whether the course had an impact on their digital pedagogical skills and competencies.

2.2 *Research Participants*

This study included fifty-nine (59) Aga Khan University M. Ed Education Students Table 1, 39(66.1%) males and 20(33.9%) females who were enrolled for ICT in Education course. The participants were from the three East African countries i.e., 16(27.1%) from Tanzania, 36(61.0%) from Kenya and 7(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 5(8.5%) Primary (grades K - 2), 8(13.6%) Middle School (grades 6 - 8), 23(39.0%) High School (grades 9 - 12), 11(18.6%) Higher / Professional education. The other 8(13.6%) were teaching at the K-12 level while the other 4(6.8%) course participants did not specify the levels they teach.

Table 1: Participants' demographic information

Variable	Category	Frequency	Percent
Gender	Male	39	66.1
	Female	20	33.9
	Total	59	100.0
Country	Tanzania	16	27.1
	Kenya	36	61.0
	Uganda	7	11.9
	Total	**59**	**100.0**
Grade level taught	Primary (grades K - 2)	5	8.5
	Middle School (grades 6 - 8)	8	13.6
	High School (grades 9 - 12)	23	39.0
	Higher / Professional education	11	18.6
	K-12	8	13.6
	Others	4	6.8
	Total	**59**	**100.0**

2.3 *Data Collection Methods and Procedures*

An assessment tool for competency levels was used at the beginning of the session. This tool was the SelfieForTeachers, a self-assessment tool developed by Ghomi and Redecker (2019). Teachers can assess their level of digital competency, consider their digital capabilities, and identify areas in need of professional growth and training by using the DigCompEdu framework. Three principles served as the foundation for the tool's development: (i) distilling and streamlining the core ideas of the framework; (ii) converting competence descriptors into tangible tasks and

procedures; and (iii) offering instructors tailored feedback according to their proficiency levels across all 22 indicators. Each item consists of five possible responses that are cumulatively structured and mapped to the proficiency levels, along with a statement that embodies the essence of competence in concrete, practical phrases. The response that most closely resembles the instructor's style of instruction must be selected.

Participants were introduced to the UNESCO MGIEP Digital Teacher Course (treatment/intervention), which was delivered via a combination of live F2F sessions and self-study modules accessed via the FramerSpace Learning Management system. At the beginning of the digital teacher course, a baseline survey was administered. The instrument was divided into six competency sections covering 1) comfort with technology, 2) use of technology in teaching, 3) education technology knowledge, 4) digital pedagogy, 5) training, and 6) teaching and learning scenarios. The survey also included questions about demographic information and school type. After the training (Lives session and taking online modules) using a similar post-training survey, differences in skills in the same six areas of the baseline survey were analyzed.

2.4 *Data analysis*

Immediately after data collection, the data collected was analyzed both descriptively and inferentially to obtain the best interpretation of the results based on the variables in the stated hypotheses. First, the mean, standard deviation, frequencies, and percentages were calculated as descriptive statistics. The effect of the independent variables on the dependent variables was then confirmed by calculating the normalized gain on the average mean and standard deviation (Reid et al., 2014). Additionally, the independent samples' t-value was obtained using inferential statistics, and this value was then utilized to calculate the effect size both before and after the intervention. The IBM Statistical Package for Social Sciences (SPSS), version 26, in conjunction with Microsoft Office Excel, version 2019, was used for the analysis. In addition, the interpretation of the results was done to accept the alternative hypotheses stated (Abbott, 2011; Pallant, 2020). Lastly, meaningful information was obtained from the interpretation to contribute to a body of knowledge based on the proposed research problem.

3. Research Findings

The analysis of pre-and post-test results of the UNESCO MGIEP digital teacher course survey resulted in interesting findings to answer the stated research questions as well as the hypothesis as follows.

To determine the level of educators' familiarity with using, creating, and finding the right digital resources and using video conferencing tools; the participants were required to level themselves in ranks between 1 and 5. The ranks ranged from not familiar at all to completely familiar. The participants ranked themselves both before and after taking the UNESCO MGIEP digital teacher course. Although the course lasted only for a month, the course had an impact on the participants' familiarity as seen in Figures 4(a) and 4(b). The results revealed the participants' familiarity with using video conferencing tool/s. (Zoom, Microsoft Teams, Google Meet) to have increased by 4.6% in the post-test from 33.9% to 37.3%. Their level of familiarity with CREATING digital resources for teaching was moderate/average in the post-test and it increased by 6.8% in the post-test from 39.0% to 45.8%. Their familiarity with USING digital resources for teaching was seen to remain the same both before and after the course and it was seen to be moderate only by 35.6%. Further, the participants' familiarity with finding the right resources relevant to their teaching scored 23.7% in the post-test, although it increased by 6.8% from 16.9% in the pre-test. The results imply that the course had a significant impact on the participants' digital pedagogical competencies such as the highlighted familiarities.

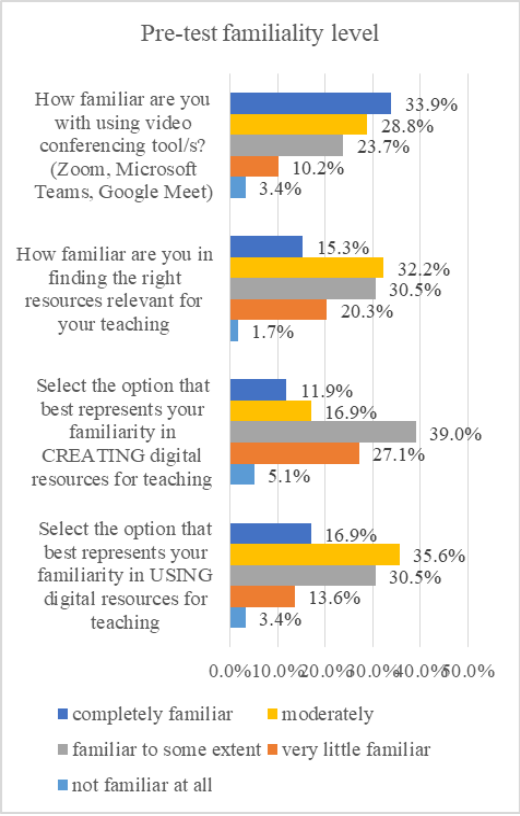

Figure 4(a): Pre-test familiarity level

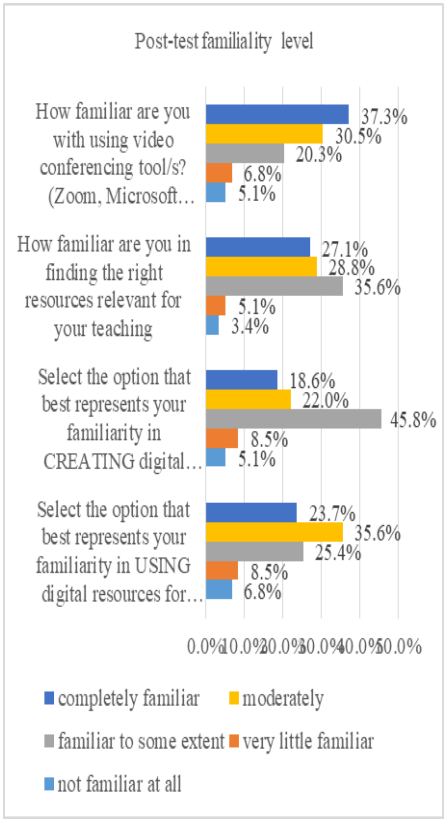

Figure 4(b): Post-test familiarity

level

In addition, the results on familiarity level indicate a substantial increase in the normalized gain as seen in Table 2 of both average mean and standard deviation before and after the course. The results of the N-gain confirm the acceptance of the first and second alternative hypotheses (H_1 and H_2). The results indicate a more normalized gain for participants' familiarity with creating digital resources (N-Gain = 0.4) and in finding the right digital resources relevant to their teaching (N-Gain = 0.3).

Table 2: A table of average mean and standard deviation before and after the course

	Average Mean			Standard Deviation		
	Pre-	**Post-**	**N-Gain**	**Pre-**	**Post-**	**N-Gain**
Select the option that best represents your familiarity in USING digital resources for teaching	3.49	3.61	0.10	1.040	1.145	0.001
Select the option that best represents your familiarity in CREATING digital resources for teaching	3.03	3.41	0.40	1.066	1.052	0.000
How familiar are you in finding the right resources relevant for your teaching	3.39	3.71	0.30	1.034	1.035	0.000
How familiar are you with using video conferencing tool/s? (Zoom, Microsoft Teams, Google Meet)	3.80	3.88	0.10	1.126	1.146	0.002

The statistical information on the analysis of the digital tools identified by the participants both in the pre-test and the post-test revealed that the participants are conversant in using images 83%, videos 78.0%, audio 61.0%, and discussion forums 67.8%. Figure 5(b) verifies the drastic increase in the use of discussion forums from 55.9% in the pre-test to 67.8% by 11.9%. Although the participants seemed not to prefer using podcasts and it scored low by 16.9% of all digital tools in the pre-test, the results reveal an increase of 3.4% to 20.3% in the post-test.

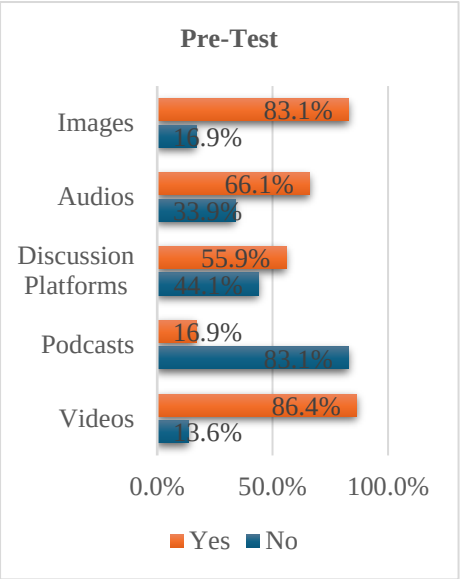

Figure 5(a): Digital tools used in the pre-test

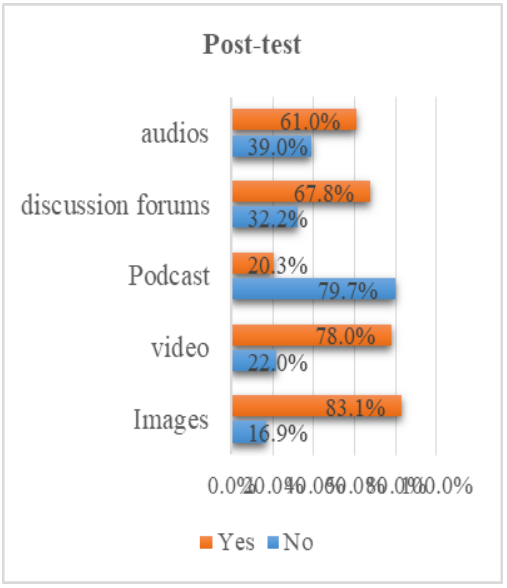

Figure 5(a): Digital tools used in the post-test.

It was anticipated in the assumptions made in the alternative hypotheses H_1 and H_4 that educators' professional practice and their digital pedagogical competencies respectively could increase as an impact of the implementation of the UNESCO MGIEP digital teacher course. The results of the pre-test revealed that only 30(50.8%) participants used only one or two of the identified digital tools and resources. The participants' use of three or more digital tools and resources increased by 4(7.2%) to 28(47.5%) from 24(40.7%) as seen in Table 3 after the course.

Table 3: Frequency table on the number of digital tools and resources used.

	Pre-test		Post-test	
	Frequency	**Percent**	**Frequency**	**Percent**
used 1or 2	30	50.8	27	45.8
used 3 or more	24	40.7	28	47.5
used none	5	8.5	4	6.8
Total	**59**	**100.0**	**59**	**100.0**

Furthermore, Figures 6 (a) and (b) show the digital resources identified by the participants both in the pre-test and in the post-test. The results verified that the participants preferred file sharing 83.1%, use of Google form 88.1%, and discussion forums 81.4%. The use of Padlet 27.1%, Mind mapping 25.4%, Blogs 22.0%, Word Cloud 20.3% and YouTube 8.5% was seen to be less in the

post-test whereas the use of YouTube achieved lower than all the listed digital resources both in the pre-test and post-test. These results imply that more emphasis should be directed on the use of digital resources that were seen not to be preferred by the participants.

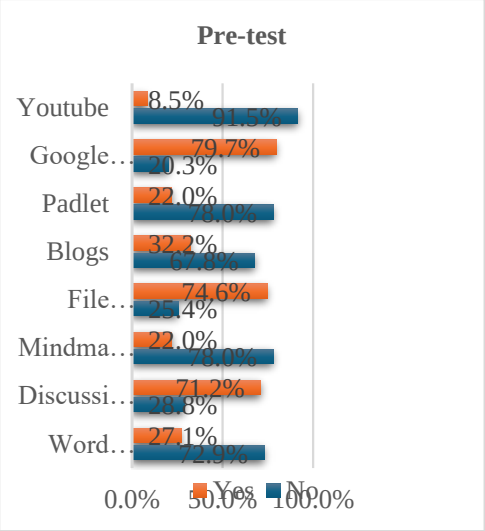

Figure 6 (a) Digital resources used pre-test

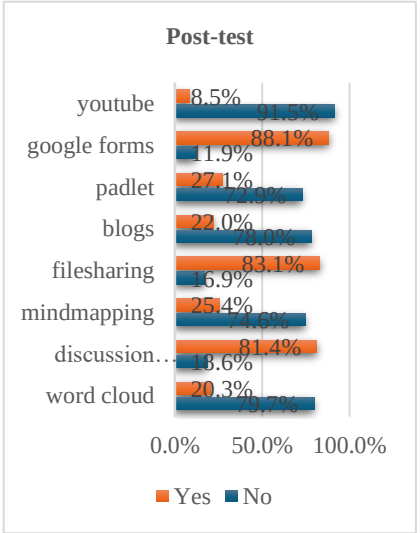

Figure 6 (a) Digital resources used post-test.

On the aspect of peer learning after online sessions Table 4, the results revealed a slight improvement in the educators' abilities to interact with their peers. Many educators rated themselves to prefer sharing their work on digital whiteboards after online classes. The number of educators who indicated holding a 2.5-hour online session where every student can read their write-up before the class reduced from 5(8.5%) to 2(3.4%) while the number of those who prefer choosing few representatives to share their work reduced the length of the online sessions increased from 2(3.4%) to 4(6.8%). This means that the UNESCO MGIEP Digital Teacher Course had an impact on educators' peer learning. Thus, the results authorize the acceptance of the third (H_3) alternative hypothesis.

Table 4: Peer learning after online class session

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Request that all students share their written works with their peers on an electronic whiteboard.	52	88.1	53	89.8
To shorten the duration of the online class, ask a few students to share.	2	3.4	4	6.8
Organize a 2.5-hour virtual session where students can peruse their written work before to class.	5	8.5	2	3.4
Total	**59**	**100.0**	**59**	**100.0**

5. Discussion

The primary focus of this study is to examine the role of the UNESCO MGIEP Digital Teacher Course in improving educators' proficiency in using digital resources and its influence on their digital pedagogical skills. The findings of this research provide valuable insights into the influence of the course on enhancing participants' digital pedagogical competencies, with a specific emphasis on their familiarity with digital tools and the creation and use of digital resources for teaching. The results of the study showcasing a growth in participants' familiarity with leading video conferencing platforms (such as Zoom, Microsoft Teams, and Google Meet) serve as a promising indication of the tangible impact the course had on their ability to effectively engage in online teaching and communication. This rise further highlights the positive influence of the UNESCO MGIEP Digital Teacher Course, which undoubtedly played a crucial role in enhancing educators' proficiency in utilizing these tools for remote instruction. This finding holds significant relevance in today's world, where virtual classrooms and remote learning environments have gained immense importance. In line with the DigCompEdu framework adopted in this study, the educators confirmed the improvement in their familiarity with digital tools, creation and use of digital resources which has a direct impact on their ability to facilitate learners' digital competencies. Taking into consideration the statistical data presented in Table 2 on the normalized gain of the educators' familiarity, both educators and the learners must be familiar with the digital tools and resources which can be used in the teaching and learning process.

The findings indicate that the course effectively supported educators in developing the skills necessary to design and produce digital teaching materials. Besides, many educators utilized one or two digital tools, suggesting a potential deficiency in their initial use of such resources. This may be a result of various barriers, such as inadequate knowledge or training, or a lack of self-assurance in utilizing multiple tools in their teaching practices (Michos et al., 2022). However, the course catered to this gap, as evident in the post-test results, which showed a marked increase in the utilization of a diverse range of digital tools by educators. This observed shift is in line with Spante et al. (2018) where a promising trajectory in educators' embrace of digital resources is highlighted. Additionally, there was a notable increase in the utilization of at least three digital tools and resources, pointing towards a positive shift in educators' professional practice. These outcomes align with the anticipated benefits of participating in the UNESCO MGIEP course. The observed shift reveals a promising trend in how educators are evolving in their professional practice (Ghomi & Redecker, 2019). Educators can boost their teaching methods, foster better student engagement, and cultivate a more dynamic and interactive learning environment by expanding their repertoire of digital tools and resources (Pettersson, 2018; Redecker, 2017). This aligns with the greater aim of enhancing the quality of education through digital pedagogy.

The notable uptick in participants' aptitude for locating appropriate resources relating to their teaching highlights the effectiveness of the UNESCO MGIEP Digital Teacher Course in enhancing their ability to curate and choose digital materials that align with their instructional goals. This progress is crucial for educators as it ensures the integration of pedagogically sound and contextually relevant materials into their lessons (Kafyulilo, 2014; Tabieh et al., 2021). This outcome emphasizes the value of targeted training programs in equipping educators to develop resources that align with modern teaching techniques (Yazon et al., 2019). Furthermore, the consistency in familiarity with using digital resources for teaching before and after the course suggests that while educators may possess a fundamental level of comfort with these tools, there is always room for growth and improvement (Lea & Jones, 2011). Furthermore, additional research may be necessary to fully comprehend the elements influencing this consistency and whether specific tactics are necessary to advance the adoption of digital resources among educators.

6. Conclusion

The results indicate that the UNESCO MGIEP Digital Teacher Course greatly influenced educators' abilities in digital pedagogy, specifically when it came to utilizing video conferencing tools and creating and identifying digital teaching resources. The N-Gain results offer clear, data-

driven proof of the UNESCO MGIEP Digital Teacher Course's ability to improve participants' digital pedagogical competencies. The significant improvements in creating and locating digital resources demonstrate the course's effectiveness in addressing the crucial needs of educators. However, the smaller advancements in utilizing digital resources and video conferencing tools highlight areas that may benefit from further refinement in future versions of the course. These findings provide valuable perspectives in the ongoing dialogue on enriching educators' digital skills through focused professional development opportunities. From the highlighted findings it can be concluded that targeted professional development, like the UNESCO MGIEP course, has a significant impact on enhancing educators' digital competencies. Ultimately, this would lead to a more enriched and technology-integrated learning experience for students. However, it is important to continue providing support and conducting further research on specific aspects of digital resource utilization and teachers' competencies to continually strengthen educators' overall digital pedagogical skills.

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References

Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st-century challenges: The case for the European Digital Competence Framework for Educators (DIGCOMPEDU*). European Journal of Education*, *54*(3), 356–369. https://doi.org/10.1111/ejed.12345

Diz-Otero, M., Portela-Pino, I., Dom ınguez-Lloria, S., & Pino-Juste, M. (2022). Digital competence in secondary education teachers during the COVID-19-derived pandemic: Comparative analysis. *Educatiom + Training*.

Ghomi, M., & Redecker, C. (2019). Digital Competence of Educators (DigCompEdu): Development and Evaluation of a Self-assessment Instrument for Teachers' Digital Competence: *Proceedings of the 11th International Conference on Computer Supported Education*, 541–548. https://doi.org/10.5220/0007679005410548

Howell, J. (2012). *Teaching with ICT: Digital pedagogies for collaboration & creativity*. Oxford University Press.

Kafyulilo, A. (2014). Access, use and perceptions of teachers and students towards mobile phones

as a tool for teaching and learning in Tanzania. *Education and Information Technologies*, *19*(1), 115–127. https://doi.org/10.1007/s10639-012-9207-y

Kivunja, C. (2016). How to Write An Effective Research Proposal For Higher Degree Research in Higher Education: Lessons From Practice. *International Journal of Higher Education*, *5*(2), p163. https://doi.org/10.5430/ijhe.v5n2p163

Lea, M. R., & Jones, S. (2011). Digital literacies in higher education: Exploring textual and technological practice. *Studies in Higher Education*, *36*(4), 377–393. https://doi.org/10.1080/03075071003664021

McKnight, K., O'Malley, K., Ruzic, R., Horsley, M. K., Franey, J. J., & Bassett, K. (2016). Teaching in a Digital Age: How Educators Use Technology to Improve Student Learning. *Journal of Research on Technology in Education*, *48*(3), 194–211. https://doi.org/10.1080/15391523.2016.1175856

Michos, K., Cantieni, A., Schmid, R., Müller, L., & Petko, D. (2022). Examining the relationship between internship experiences, teaching enthusiasm, and teacher self-efficacy when using a mobile portfolio app. *Teaching and Teacher Education*, *109*, 103570. https://doi.org/10.1016/j.tate.2021.103570

Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. *Teachers College Record: The Voice of Scholarship in Education*, *108*(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Mtebe, J. S., & Kondoro, A. W. (2016). Using Mobile Moodle to enhance Moodle LMS accessibility and usage at the University of Dar es Salaam. *2016 IST-Africa Week Conference*, 1–11. https://doi.org/10.1109/ISTAFRICA.2016.7530649

Njiku, J., Maniraho, J. F., & Mutarutinya, V. (2019). Understanding teachers' attitude towards computer technology integration in education: A review of literature. *Education and Information Technologies*, *24*(5), 3041–3052. https://doi.org/10.1007/s10639-019-09917-z

Nowak, B. M. (2019). Development Of Digital Competences Of Students Of Teacher Training Studies—Polish Casus. *International Journal of Higher Education*, *8*(6), 262. https://doi.org/10.5430/ijhe.v8n6p262

Pettersson, F. (2018). On the issues of digital competence in educational contexts – a review of literature. *Education and Information Technologies*, *23*(3), 1005–1021.

https://doi.org/10.1007/s10639-017-9649-3

Redecker, C. (2017). *European framework for the digital competence of educators DigCompEdu*. Publications Office.

Shulman, L. S. (1986). Those Who Understand: Knowledge Growth in Teaching. *Educational Researcher*, *15*(2), 4–14. https://doi.org/10.3102/0013189X015002004

Spante, M., Hashemi, S. S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use. *Cogent Education*, *5*(1), 1519143. https://doi.org/10.1080/2331186X.2018.1519143

Tabieh, A. A. S., Hamzeh, M., Abu-Foudeh, B. Kh. S., Jarrar, N., Al-Manaseer, S., Al-Shawabkeh, A., & Seikaly, R. (2021). Digital Literacy and its Acquisition by Teachers and Principals at Educational Workplaces. *International Journal of Learning, Teaching and Educational Research*, *20*(5), 38–55. https://doi.org/10.26803/ijlter.20.5.3

Wang, Q., Myers, M. D., & Sundaram, D. (2013). Digital Natives und Digital Immigrants: Entwicklung eines Modells digitaler Gewandtheit. *WIRTSCHAFTSINFORMATIK*, *55*(6), 409–420. https://doi.org/10.1007/s11576-013-0390-2

Yazon, A., Ang-Manaig, K., Buama, C. A. C., & Tesoro, J. F. B. (2019). Digital Literacy, Digital Competence and Research Productivity of Educators. *Universal Journal of Educational Research*, *7*(8), 1734–1743. https://doi.org/10.13189/ujer.2019.070812