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FROM CHALKS TO CLICKS: ENHANCING EDUCATOR SKILLS THROUGH DIGITAL COMPETENCE

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Abstract

Purpose:
This study explores how educator skills can be enhanced through digital competence, highlighting its importance in the evolving landscape of higher education with a focus on business studies, while aiming to equip educators with the necessary digital skills to effectively prepare students for today's globalized business environment.

Design/methodology/approach:
Employing a systematic literature review, the research scrutinizes digital competence levels among

educators, leveraging key studies and frameworks like DigCompEdu and the Kirkpatrick Model, and examining real-life case studies to assess the impact of digital technologies in education.

Findings:
The findings illuminate the transformative effect of digital technology in business education and propose a Conceptual Model identifying key factors for educators' digital skill enhancement. This model emphasizes the role of training programs, digital infrastructure, and policy frameworks as facilitators, emphasizing the integration of technology in teaching and the development of global business competencies.

Originality:
The paper contributes a novel perspective to develop the skills of educators today by integrating various frameworks and empirical insights, offering insights into the development of a more digitally competent teaching workforce in business schools, aligning with the demands of the changing global business sector.

Practical implications:
Recommendations are provided for integrating technology in education, with a focus on business studies, professional development and policy adjustments to enhance digital competencies among educators.

Social implications:
The enhancement of digital skills in education has broader societal implications, fostering a digitally literate workforce of educators who are adept in navigating and contributing to a technology-centric world, thereby empowering the next generation of students with the skills necessary for success.

Keywords: *Digital Competence, Educator Skills, Systematic Literature Review, Educational Technology, Digital Literacy, Technology Integration, Professional Development, Digital Transformation, Higher Education, Business School, Business Studies.*

Introduction

The digital era has dramatically redefined various aspects of life, especially education. As new technologies are quickly developed and incorporated into all aspects of our daily lives, their swift amalgamation into educational contexts necessitates a fundamental shift in teaching and learning approaches. Digital technologies have evolved significantly, transforming from stand-alone projects to extensive networks that connect people and things globally, thus enriching and transforming education. This evolution aids in addressing both personal and global challenges, enhancing the quality, relevance, and accessibility of education (Miao, Holmes, Huang, & Zhang, 2021) leading to a transformation of the educational landscape significantly. This transformation was accelerated dramatically when organizations faced the Covid-19 pandemic on a global scale,

leading to a rushed digitalization of education. The pandemic not only changed the delivery process of higher education, but also exposed the digital divide, underscoring the need for digital literacy, highlighting the urgency to adapt and evolve. There is a clear need for a globally coordinated effort to educate and equip students with digital skills essential in this rapidly evolving digital landscape, emphasizing digital citizenship and a broad spectrum of digital skills (Nature Human Behaviour, 2021).

While current theories and models primarily emphasize on school and pre-university education, there is an increasing awareness that understanding and enhancing the digital skills of higher education university-level professors, tutors and all educators through improvement of the knowledge, skills and attitudes (KSAs) required to utilize technology in educational settings is vital. The integration of technology into education has positively changed learning and teaching methods, by providing a range of new resources for self-directed learning and simplifying complex concepts (University of the People, n.d.). Moreover, it promotes creativity and innovation among students by facilitating hands on and engaging learning experiences (University of the People, n.d.). Additionally, technology in education enables learning, improves communication and collaboration opportunities and equips students with skills, for a workforce that heavily relies on technology (University of the People, n.d.).

Research Methodology

The research methodology centers on a Systematic Literature Review (SLR) to explore digital competence among higher education educators. It leverages databases like Web of Science and Scopus to identify peer-reviewed articles and reviews. The methodology includes a detailed database search strategy, strict inclusion and exclusion criteria to ensure relevance and quality, and critical evaluation of selected studies for their contribution to digital competence understanding. This approach enables a comprehensive analysis of empirical studies, notably large-scale surveys, to assess educators' self-perceived digital competence, utilizing frameworks like the European Framework for the Digital Competence of Educators (DigCompEdu) [adapted from Redecker & Punie, 2017]. This rigorous process helps in synthesizing existing literature, identifying key themes, and pinpointing gaps for future research in the realm of digital competence in education.

Background and Literature Review

Digitization in Higher Education: The swift advancement of technologies in information and communication processes has transformed the landscape of higher education, shifting it from the industrial age a hundred years ago, through the information age during the past decades and currently into the knowledge age. Digital competence is essential for faculty in higher education to better fulfill their role as teachers and for developing new pedagogical approaches, enhancing student engagement, and managing university resources in a digital context (Shi *et al.,* 2021; Mishra *et al.,* 2021). Educators' Digital Competence (EDC) is central to this transition, impacting teaching methods, pedagogical approaches, and overall management of universities and educational institutions. The evolution of digital competence also implies changes in the way

universities strategize and operate in the digital context, highlighting the significant role of digitalization in higher education (Mishra *et al.,* 2021). Digitization in higher educational institutions signifies a systemic shift affecting teaching, governance, and management of educational institutions, as well as the labor market's response to technological opportunities (European Commission, n.d.).

Digitization of TVET: In their recent report, the International Labour Organization (ILO) in partnership with the United Nations Educational, Scientific and Cultural Organization (UNESCO) have highlighted the profound impact of digitization on Technical and Vocational Education and Training (TVET). This transformation, denoted as 'Industry 4.0', is branded by the blend of digital, physical and biological domains, pushed-ahead by new developments in artificial intelligence (AI), robotics, and 3D printing (International Labour Organization, 2020). Innovations are predominantly institution-driven, with labor market adaptations not entirely aligning with TVET curricula or operations. However, digitization remains a driving force for lifelong learning and flexible pathways. Despite many new technological advancements, the digital divide persists, highlighting the necessity for ICT skill development among educators (European Commission, n.d.).

The Bridging Innovation and Learning in TVET (BILT) project by UNESCO, emphasizes the interplay of digitalization with broader societal issues like climate change. The project focuses on the dual transition of digitalization and greening by incorporating new technologies in several environmental and sustainable practices in various sectors (European Commission, n.d.). Moreover, the TESDA Online Programme demonstrates how ICT can be leveraged to enhance higher education, with a focus on inclusivity and sustainability in curriculum development. This highlights the importance of educational systems adapting to technological progress and workforce needs.

Educator Competence: Digital competence is a key competency for teachers, encompassing an array of skills, knowledge and attitudes that are necessary for students to achieve their learning outcomes. These can include ability to work with information and data in their area of specialization using computer devices and working online, appropriate digital communication tools and applications, media literacy to be able to source relevant information and stay on top of emerging trends and social media updates, and problem-solving skills. According to recent research relating to the evaluation of educational practices, educators show comparatively low to medium-low competence in this area. Therefore, it can be inferred that continuous improvement through practical training programs in application of digital tools for educators is necessary (Rodríguez-García *et al.,* 2023).

Various models like 'DigCompEdu' and UNESCO's 'ICT Competencies for Teachers' provide guidelines for developing digital competence. These models emphasize a holistic approach to integrating digital skills in teaching, considering aspects such as pedagogical-didactic criteria and ethical considerations. The COVID-19 pandemic highlighted gaps in digital competencies

among educators, showing the need for better training and adaptation of pedagogical methods to digital environments. This situation has led to increasing number of publications and research on this topic, indicating a growing interest in enhancing digital competencies at the university level (Rodríguez-García *et al.,* 2023).

Student Perspectives on Digital Learning Tools: Higher education institutions might be invested heavily in edtech tools, but often student feedback on these tools is overlooked. The Massachusetts Department of Elementary and Secondary Education has developed an equity-driven edtech guide titled "Equity in EdTech: A Student-Centered Approach" to assist in choosing and assessing these tools effectively, emphasizing the importance of including student perspectives (Massachusetts Department of Elementary and Secondary Education, 2023). Methods include student surveys, focus groups, and involving students in planning and decision-making processes. For instance, Cambridge Public Schools conducted a survey with fifth graders on their understanding of specific tools used districtwide (Cambridge Public Schools, n.d.). Such an approach would bring about a positive response for higher education institutions as well. Including students in the decision-making process regarding edtech tools not only provides valuable insights but also helps educators understand the students' perspective, enhancing the learning experience (Massachusetts Department of Elementary and Secondary Education, 2023).

Interactive Learning Technologies in Education: These technologies significantly enhance learning outcomes through simulations and games, promoting active engagement and problem-solving (Clark & Mayer, 2016). Mobile devices personalize learning, allowing students to study at their own pace, improving motivation and performance (Crompton, Burke, & Gregory, 2017). E-learning platforms are crucial for professional development, enhancing skills and productivity, although further research is needed to detail their impact (Bower & Hardy, 2018). Technology integration in teaching, such as interactive whiteboards, increases student engagement and comprehension, especially in healthcare education, by enhancing academic achievement and teacher-student interactions (Hennessy *et al.,* 2007; Romli *et al.,* 2020). Online collaborative learning boosts problem-solving and critical thinking through technology-mediated collaboration (Johnson, 2016). MOOCs and social media, like Twitter, expand educational access and support professional development and digital literacy, enabling educators to improve their digital competencies in evolving educational environments (Fadli *et al.,* 2020; Gleason & Manca, 2020).

Various theoretical frameworks were reviewed to explore how educational institutions could effectively adopt digital literacy, adult learning, and technology. The Digital Practitioner Framework (DPF) focuses on the essential characteristics and skills of digitally proficient university professors (Bennett, 2014; Basilotta-Gómez-Pablos *et al.,* 2022). The IEEE Standard for Digital Intelligence (DQ) Framework, developed with OECD, IEEE, WEF, and DQ Institute, sets global standards for digital literacy and competencies (Nature Human Behaviour, 2021). A Conceptual Framework of Digital Literacies encompasses intellectual, technical, and social aspects, offering a comprehensive view on digital literacies in education (Smith & Storrs, 2023). The Blended Learning and GTCU Frameworks assess digital competences in informational,

epistemological, and social dimensions within blended learning environments (Blayone *et al.,* 2017). Additionally, the Unified Theory of Acceptance and Use of Technology (UTAUT) and Social Constructivist Approach emphasize the role of digital literacy in technology adoption and the importance of social interactions in learning (Basilotta-Gómez-Pablos *et al.,* 2022; Smith & Storrs, 2023). Collectively, these frameworks present a multidimensional approach to understanding digital competence, literacy, and pedagogical innovation in educational settings.

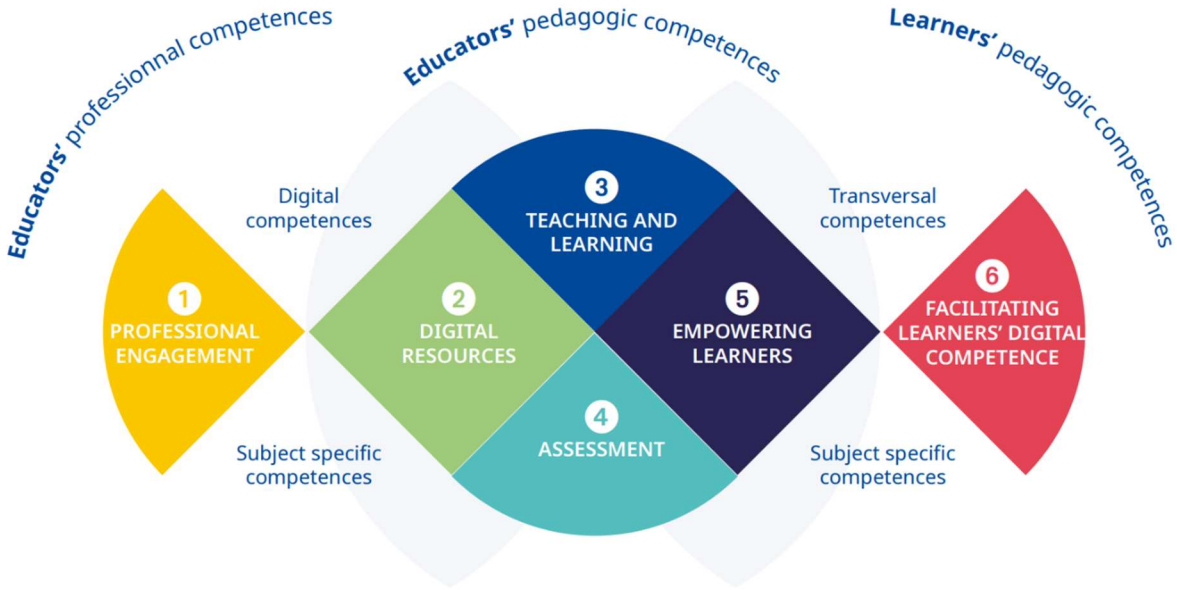
Application of the European Framework for Digital Competence of Educators (DigCompEdu)

The European Framework for the Digital Competence of Educators (DigCompEdu) is a comprehensive initiative developed by the Joint Research Centre of the European Commission to bolster the digital skills of educators across different levels of education, including higher education, vocational training, and special needs education. DigCompEdu delineates twenty-two competencies across six key areas, aiming to systematically enhance digital literacy among educators to meet the evolving demands of the digital age in teaching professions (Joint Research Centre, European Commission, n.d.; Redecker & Punie, 2017).

The framework emphasizes 'Professional Engagement', advocating for educators to utilize digital technologies for better communication, collaboration, and professional development, ensuring they remain updated with the latest developments in their fields (Joint Research Centre, European Commission, n.d.). In 'Digital Resources', it highlights the importance of creating, sharing, and managing digital content securely, reflecting the shift towards online platforms for educational resource management (Joint Research Centre, European Commission, n.d.).

The 'Learning and Teaching' area focuses on the integration of digital tools to enrich teaching methods and foster digital literacy among students, utilizing interactive online tools to make learning more engaging (Joint Research Centre, European Commission, n.d.). Assessment stresses leveraging digital technologies for evaluating student performance more efficiently, enabling educators to concentrate on key aspects of their role while automating the grading process (Joint Research Centre, European Commission, n.d.). 'Empowering Learners' centers on using digital technologies to support learner diversity and promote inclusion, minimizing biases in interactions and evaluations through anonymous assessments and selections (Joint Research Centre, European Commission, n.d.). Lastly, 'Facilitation of Learners'' Digital Competence underscores guiding students safely in the digital environment, ensuring a secure platform for learning, collaboration, and expression without fear of undue criticism or judgment (Joint Research Centre, European Commission, n.d.).

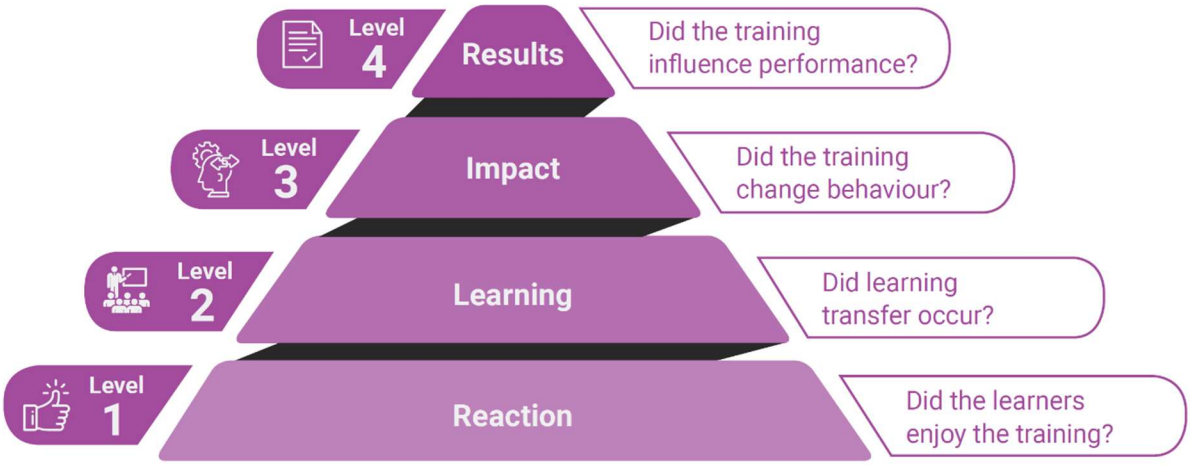
Collectively, DigCompEdu provides a structured approach to digital competence, blending technology adoption with pedagogical innovation to prepare educators for the digital challenges and opportunities in contemporary education environments.



[Figure I] European Framework for the Digital Competence of Educators (DigCompEdu) [Adapted from Redecker & Punie, 2017]. Source: International Labour Organization (2020). "The Digitization of TVET and Skills Systems." Retrieved from https://www.ilo.org/skills/areas/skills-policies-and-systems/WCMS_752213/lang--en/index.htm

Application of the Kirkpatrick Model using Technology to Evaluate Professional Development Programs

To support educators in enhancing their digital skills, the 'Kirkpatrick Model' was found to be appropriate. When applied in conjunction with technology, it provides a comprehensive framework for evaluating the effectiveness of professional development programs (Kirkpatrick, 1994). As seen in below figure 2, this model assesses training programs based on four levels (Kurt, S., 2018).



[Figure II] Four levels of the Kirkpatrick Model (Kirkpatrick, 1994). Adapted from Kodo Survey (2018). Retrieved from https://kodosurvey.com/blog/how-master-kirkpatrick-model-training-evaluation

In order to make this model match the digitalization of the educational environment, this model can be evaluated based on the current digital environment to be more effective as follows. As Business Studies educators, we have used relevant examples related to our field:

- *Reaction:* Measuring the immediate response of participants to the training using digital tools, including their engagement and satisfaction. Today this can be done using online surveys and gamification tools for class activities to gauge the response rate of business students. There are a lot of applications that support tutors to review the interest and reaction of their students to various types of class-activities in any business course. This is crucial in both face-to-face and virtual environments, to ensure user experience is positive and conducive to learning.
- *Learning:* Assessing the advancement in learner knowledge or skills as a consequence of the training or session completed. In an effective pedagogy, tutors can use pre-testing and post-testing before and after the concerned business topic or learning outcome is discussed and covered as per the lesson plan. With the availability of online digital applications such as Kahoot and Socrative, it becomes easy for the teachers handling courses such as Human Resources, Marketing and Management to review the performance of students during their sessions using various metrics to evaluate the learner's acquisition of the learning outcomes and targeted skills or knowledge.
- *Behavior:* Observing the level to which the training/ learning session influences student behavior, particularly in applying the learned skills in real-world or simulated settings. By tying up with businesses and organizations, higher educational institutions can continue their measurement of their programs even after the learners have graduated. Companies today have a variety of technology-based applications to monitor their employee performance levels at work. When educators have access to these results, they can greatly benefit from the information to redesign their pedagogical approaches. Business courses can be redesigned and updated to match the needs and feedback of industry partners, who can give valuable inputs on what knowledge and skills they value and whether the learners have been able to inculcate those required skills during the completion of each course.
- *Results:* Evaluating the ultimate impact of the training on organizational goals or broader outcomes. This involves analyzing how the training contributes to the larger mission or purpose of the organization (Carnell *et al.,* 2022). Long-term studies in association with industry partners and corporate trainers can support educationalists on keeping their courses updated and appropriate to the modern industry while also remaining relevant themselves. The digital skills and knowledge of the educator would greatly support him/her to develop the skills of their students and ensure organizations are successful.

Virtual environments for example, facilitate a more immersive learning experience, allowing for a deeper evaluation of behavior changes and achievement of learning outcomes. They provide an opportunity to observe and evaluate behavioral changes in a controlled setting before applying them in real-world scenarios. The application of virtual patients (VPs) or virtual humans (VHs) in training scenarios allows for the measurement of specific behavioral changes over time, which is crucial for fields like healthcare where communication skills are paramount. A study on speech-language pathology students interacting with virtual patients illustrates this application. The research used the Kirkpatrick Model to calculate changes in communication skills, targeting specific metrics like patient adherence. The results showed that students displayed significant changes in communication skills during the period of their course, validating their effectiveness in depicting trainee behavioral data (Carnell *et al.,* 2022). Such tools can be applied to improve learning in Business courses as well. For example, Business schools handling courses in Human Resource relating to Leadership, Employee Relations can leverage virtual environments to simulate complex interpersonal interactions, conflict resolution, or negotiation scenarios. These virtual settings enable students to practice and refine their communication, leadership, and problem-solving skills in a risk-free environment. By engaging with virtual employees or teams, students can receive immediate feedback on their decision-making processes and leadership styles, facilitating a more dynamic and interactive learning experience that mirrors real-world business challenges.

Case-Studies and Real-world Examples of Successful Integration

Below are examples of successful integration of digital technologies within the education sector:

- *Virtual Learning in China:* Higher education institutions have adopted various campus-wide applications to manage student records and facilitate learning. These include student information systems, learning management systems like Blackboard App or Canvas Student, and other tools like AnkiMobile Flashcards, Duolingo, Evernote, Google Calendar, Google Drive, Mendeley, MindMeister, Quizlet, and safety applications (Whatfix, 2023). For over 30 million students, China's Ministry of Education had recently established a comprehensive system across thousands of universities and colleges. This system involved broadcasting lessons on TV relating to various subjects. They also seeked to ensure the provision of dozens of free online platforms with more than 20,000 courses in higher education. This template was later modeled by other countries, including the United States (Whatfix, 2023).
- *Chatbots in Academic Libraries:* Over four thousand academic libraries in the United States use chatbots to enhance library services. In the University of Oklahoma such chatbots provide 24/7 access to library information, assist in navigating databases and catalogs, and offer multilingual support. This technology compensates for constraints in organizational budgets

and supports librarians and administrators to focus on more specialized services (Whatfix, 2023).

- *AR/VR Technologies:* There are many new AR and VR technologies that are used to support students with special needs in higher education. Google's products such as Chromecast and Google Glass can support visually impaired individuals, while barcode scanning can help auditory-challenged students. There are also VR/AR tools for assisting students on the autism spectrum, and AR gamification for learning-disabled individuals. The University of Michigan developed an AR system called 'iGYM' that aids physically challenged students to play sports activities (Whatfix, 2023).

Table I: Cases of Successful Digital and Technology Application in Education

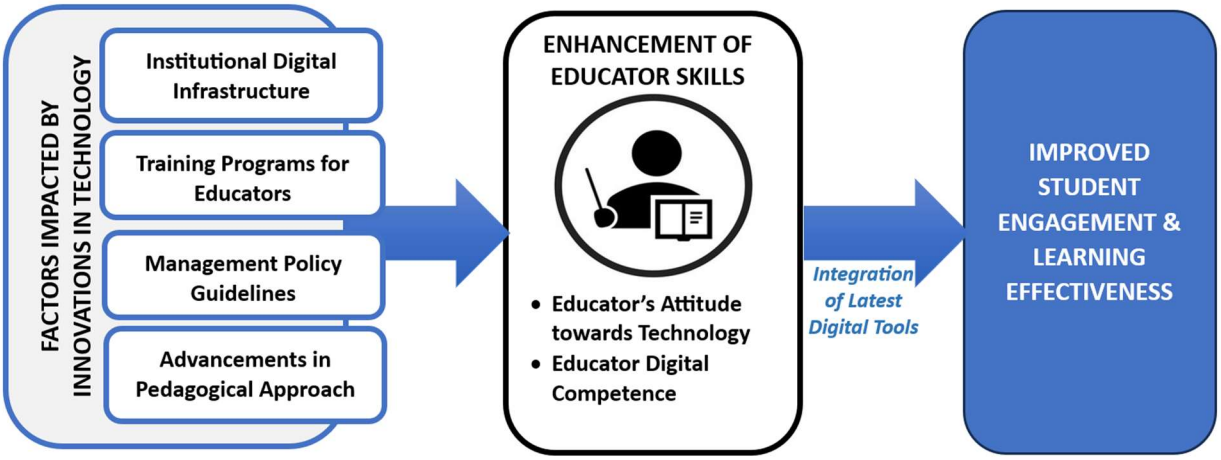
Conceptual Model on Enhancing Educator Skills Through Digital Competence

By reviewing the available research in this field, the important variables were identified, and a conceptual model has been developed for this study. As seen in Figure 3, the model is divided into three inter-related elements.

Factors Impacted by Innovations in Technology: The main factors impacted by the continuous changes in innovative new technologies, crucial in impacting educator skills, include 'Digital infrastructure' and 'educator training programs' (Jesús Valverde-Berrocoso, Jesús Acevedo-Borrega, & Mario Cerezo-Pizarro, 2021). 'Policy frameworks and guidelines' provide structured approaches for digital competence (Publications Office of the EU, n.d.). Advancements in 'pedagogical approaches' influenced by these technologies also play a significant role (Christothea Herodotou *et al.,* 2019). Since technology keeps evolving, it is important to evaluate the factors that are impacted by this change, as the real challenge for educators is to stay up-to-date with the latest tools and instruments. 'Digital infrastructure' and 'educator training programs' were found to act as key facilitators in enhancing the digital competence of educators. The support provided by these independent variables is crucial for educators to develop the necessary confidence and improve their skills so as to successfully integrate relevant digital tools within their teaching methods effectively. 'Policy frameworks and guidelines' provide a structured approach and appropriate standards for digital competence, guiding educators with a road-map for acquiring and implementing digital skills. Finally, overall 'advancements in pedagogical approaches' by other educators in the field based on these technologies also plays a role, as it influences the direction of all other trainers and professors in educational institutions. Since higher educational institutions set clear guidelines and support systems to ensure the overall quality of the institution's programs and courses match their expected standards, all these factors are inter-dependent. The support that the top-management seeks to provide the team in these factors influences the dependent variables relating to the enhancement of the educator's skills. While there can be other factors such as budget constraints and other work-challenges, the above four factors affecting educators were found to be most impacted by technology.

Enhancement of Skills: Educators work towards improving digital work skills based on changes in the aforementioned factors. Factors such as the educator's attitude towards technology and personal development significantly impact their skill levels (Christothea Herodotou *et al.,* 2019). For instance, older adults can successfully learn new technologies with appropriate training and support (Frontiers in Psychology, n.d.). Since every individual is different and every person comes from different backgrounds and has different levels of motivation, it is important to realize two key elements that impact every educator's skill. For example, a seasoned finance educator at a business school, despite being an expert in their field, may encounter hurdles adapting to the digital demands of modern finance education. With the rise of FinTech, this educator needs to embrace digital tools for teaching financial concepts, such as using simulation software for stock market analysis or blockchain demonstrations. This adoption not only enhances their teaching effectiveness but also ensures students are well-prepped for the evolving finance sector, bridging traditional finance expertise with contemporary digital applications. These challenges can be ascribed to issues such as decreases in fluid intelligence and other age-related effects. However, with individualized technology training and support, many older adults can successfully learn and use new technologies (Frontiers in Psychology, n.d.). While such demographic factors can play an important role in determining this element, it is found that overall, a person's existing knowledge and skills can impact their digital competence, as they may lag behind and find it challenging to keep up with new developments in educational technology tools. A positive attitude and openness towards digital innovations can accelerate the integration of technology in teaching, thereby enhancing educators' digital competence.

Results leading to Improved Learning Effectiveness: As educators' digital competence improves, it leads to a more dynamic learning environment, leveraging current digital technologies (Christothea Herodotou *et al.,* 2019). This, in turn, positively impacts student engagement and learning outcomes, contributing to the success of educational institutions (Jesús Valverde-Berrocoso, *et.al.*, 2021). Therefore, the dependent variable of student engagement and learning outcomes are positively impacted, improving learner commitment, achievement of course learning outcomes and overall success of the educational institution.



[Figure 3] Conceptual Model: The model shows the relationship between factors impacted by innovation in technology and how they enhance the skills of educators to improve student learning effectiveness (Own Construction).

Emerging Technologies Impacting Educators in Higher Education

While artificial intelligence (AI) is the hot topic in the year 2023, higher education institutions are integrating many advanced technologies to enhance their teaching, learning, and administrative processes, to bring about transformative changes in the education sector (Guillot, n.d.). These technologies hold significant potential to revolutionize higher education by transforming credential verification, enhancing teaching and learning, and facilitating smart campus development. However, careful consideration of challenges and privacy concerns is essential in their adoption (Fernández-Batanero *et al.,* 2023).

- *Blockchain:* Blockchain technology, initially associated with cryptocurrencies, is being explored in higher education for its potential to securely and efficiently manage academic credentials. It promises to enhance record keeping, increase efficiencies, and improve security in education (Guillot, n.d.).
- *Internet of Things (IoT):* IoT technology is transforming educational environments into smart campuses. In higher education, IoT is contributing to improved student engagement and better management of educational activities, while also enhancing campus safety (Fernández-Batanero *et al.,* 2023).
- *Machine Learning and Artificial Intelligence (AI):* Educators have been using AI-driven technologies to enhance teaching and logistical aspects like planning bus routes. The emergence of tools like ChatGPT has sparked debates on AI's role in education, balancing its potential benefits against concerns such as increased cheating and its impact on learning (EdWeek.org, 2023).

  AI's integration into education necessitates discussions about what students should know and do in this new era. It is expected to make education more relevant to individual students, challenging traditional teaching methods and necessitating rethinking assessment

methods. Educators acknowledge that AI is here to stay and must be understood and embraced. This involves implementing AI with research-based results and incorporating it into professional development programs. There are concerns that AI may hinder critical thinking and problem-solving skills, potentially exacerbating mental health issues linked to technology use. Educators worry about AI leading to dependency and diminishing students' abilities to make decisions based on facts rather than AI-generated information (EdWeek.org, 2023). When used correctly, AI can enhance the curriculum and provide significant benefits. Some educators are keen to adopt AI and explore how it can benefit students, indicating a growing interest in integrating AI into educational practices.

Limitations of the Study and Future Research

This study offers a comprehensive exploration of digital competence among educators but encounters several limitations that merit attention. Primarily, its dependence on secondary data sources and literature reviews may not capture the immediate challenges and advancements in the rapidly evolving digital education sector. This could lead to a gap in reflecting the latest trends or innovative practices post-publication (Brown & Green, 2021).

A notable limitation is the study's focus on higher education institutions in developed, urban settings, potentially restricting the applicability of its findings to educators and institutions in developing countries or rural areas where digital infrastructure and educational contexts may vary significantly (Nguyen, 2022). The qualitative and interpretive methodological approach may also fall short in capturing quantitative aspects of digital competence development, such as measurable outcomes or statistical trends in educator and student performance (Martinez, 2020).

The study somewhat overlooks the socio-economic challenges that can impede digital technology adoption in education. Critical factors like the digital divide, resource access, and institutional support, crucial for successful technology integration in education, are only briefly mentioned (Lee & Martin, 2023). Although emerging technologies like AI and VR/AR are discussed for their potential to enhance educational experiences, the study does not thoroughly investigate the practical trials and ethical considerations of their use in educational settings (Khan & O'Sullivan, 2021).

Despite these limitations, the study sheds light on the importance of advancing digital skills among educators. It underscores the need for frameworks to assess digital competencies, such as the Digital Practitioner Framework (DPF), which emphasizes technology adoption in teaching and learning (Rodríguez-García, Cabrera, & Vázquez-Cano, 2021). It also highlights the significance of educators in supporting students' digital competency development and addresses the digital skills gap identified by teachers themselves (Rodríguez-García *et al.,* 2021).

Future research directions include examining the integration of digital technologies with traditional face-to-face learning and exploring more innovative pedagogies that blend digital and in-person educational practices. Developing pedagogical elements for blended learning can

potentially enhance social interactions and educational outcomes (Antunes, Armellini, Howe, & Grandal Montero, 2021).

Conclusion, Practical Implications and Recommendations

In conclusion, we find that there are many strategic pathways for ongoing professional development to enhance educator/trainer skills through digital competence. To ensure that all relevant issues are addressed here, this section is divided into challenges and recommendations. To effectively implement digital competencies in education, educators can refer to UNESCO's 'Information and Communication Technology Competency Framework for Teachers (ICT-CFT)', which supports teacher training on using digital technologies and is adaptable to various educational levels (UNESCO, 2023). It also emphasizes the significance of open educational resources (OER) for contextualizing digital competencies (UNESCO, 2023).

Incorporating technology in classrooms should focus on enhancing lessons rather than replacing traditional teaching methods. Active digital activities, such as educational games, are preferable to passive screen time, and technology should never substitute for face-to-face interactions. For under-resourced students, technology can provide additional educational resources and experiences. Educators are encouraged to familiarize themselves with technology before introducing it to learners and to involve in continuous professional development to effectively navigate digital tools.

The integration of technology in learning and education often encounters several challenges. Inadequate infrastructure and limited resources are significant issues that hinder effective technology integration (García-Morales *et al.,* 2021). The lack of technical support is a major barrier in integrating technology in educational practices. This includes not only the technical aspects but also the absence of predefined educational policies that guide the application of technology in instructional practices ("Technology Integration in Higher Education During COVID-19", 2021). A lot of times, professional development and training are missing for educators to feel prepared to use digital tools effectively.

Teacher training programs usually do not have clearly developed pedagogical and technical competencies for effective ICT use. The programs do not usually address skills gaps and alignment with technological applications for matching pedagogical strategies ("Technology Integration in Higher Education During COVID-19", 2021). A major challenge of not having digitally trainer educators is that it has a mixed impact on student achievement. The influence of ICT on student success varies, depending on the level of support and teacher training. Effective integration of technology can enhance students' academic performance and creative thinking. Other challenges in teacher education programs include developing pedagogical and technical competencies for ICT use, influenced by factors such as inadequate training, infrastructure, and technological knowledge.

Based on our findings, we conclude this study with the below key recommendations for developing the digital skills of teachers while focusing on aspects related to international education, cross-cultural aspects of internationalization, teaching and learning in business schools, and student engagement:

1. **Strengthening Digital Competence and Professional Development**: Enhancing digital competence among educators is vital for adapting to the diverse cultural and international contexts prevalent in business education. Developing ICT skills alongside strategic learning and collaboration competencies, in line with the ICT Competency Framework for Teachers (UNESCO, 2023), ensures educators can effectively engage with students from various cultural backgrounds. Personalized training programs can address the specific needs of educators in international settings, focusing on areas such as cross-cultural communication, global collaboration, and virtual classroom support (Edutopia, 2020).

2. **Overcoming Barriers and Enhancing Technology Integration**: Overcoming barriers to technology integration is essential for promoting internationalization in business schools. Allocating sufficient budgets and facilitating access to technology resources address challenges related to limited access to computers and technical support, particularly in international contexts (UNESCO, 2023). Peer learning and sharing of best practices can help educators navigate cultural differences and overcome apprehensions about adopting new technologies, fostering collaboration in diverse international settings (Edutopia, n.d.; Hamutoglu, 2021).

3. **Tools and Strategies for Effective Learning:** Leveraging digital tools and strategies is helpful in promoting international engagement and collaboration among students in business education. Utilizing user-friendly digital tools like VoiceThread for collaborative multimedia presentations facilitates cross-cultural interactions and knowledge sharing among students from diverse backgrounds (Edutopia, n.d.). Incorporating technology into traditional face-to-face teaching methods enhances student engagement and promotes global perspectives in business education. With the prevalence of new AI tools such as ChatGPT and Google Gemini, students need to be trained to responsibly use such tools to support learning without fostering apathy towards learning, intellectual stagnation, or intellectual dependency that may inhibit their ability to think creatively or solve problems independently (Tinkle, 2024).

4. **Leadership and System-Level Support:** Effective leadership and system-level support are essential for driving internationalization efforts in business education. Clear communication from educational leaders regarding the vision for technology integration and international engagement is critical for aligning organizational goals with internationalization objectives (District Administration, 2020). Business schools and higher education institutions should prioritize resources and support for educators to ensure

they are equipped to effectively integrate technology and promote internationalization (Edutopia, n.d.).

5. **Collaboration with Tech Industry and Policy Support:** Collaboration with the tech industry and policymakers plays a crucial role in advancing international education and business school initiatives. Partnerships with the tech industry provide opportunities for business schools to stay abreast of global trends and incorporate real-world challenges and applications into the curriculum (Perkmann et al., 2013). With the sudden rise of new Artificial Intelligence (AI) and machine learning tools in almost every industry, this has become even more essential. Policymakers should allocate funds to upgrade digital infrastructure in educational institutions, ensuring they remain competitive and equipped to deliver high-quality education in a global context (Selwyn, 2014).

6. **Broadening the Scope of Digital Literacy:** Along with improving the technology skills of educators, enhancing digital literacy among students is integral to preparing them for success in the global business environment. Integrating digital skills training into the curriculum, with a focus on cross-cultural communication, global collaboration, and digital ethics, equips students with the necessary competencies to thrive in today's challenging international business settings (Janssen, Stoyanov, Ferrari, & Punie, 2013). Encouraging research in digital education fosters continuous improvement in teaching practices, ensuring business schools remain at the forefront of education innovation (Laurillard, 2012).

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