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Digital Pedagogy in Practice: Insights from Teacher Training Workshops

Rakhshanda Khan*

* International Business Programme, Haaga-Helia University of Applied Sciences, Helsinki, Finland.
E-mail: rakhshanda.khan@haaga-helia.fi

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ABSTRACT

This study investigates the prerequisites of an effective digital pedagogy and aims to find solutions to the challenges encountered during its implementation. This study utilized a qualitative research approach, and the data was acquired through interaction with 25 teachers from 5 higher education institutions across different European countries, as well as through direct observations of teacher-training workshops—face-to-face and online. The results of this study indicate that the primary requirements of effective digital pedagogy are essential cognitive and social skills, effective teaching strategies, institutional support, technology and infrastructure, and collaboration. Furthermore, it also suggests solutions for overcoming challenges in the implementation of effective digital pedagogy. The findings of this study contribute to the field of digital pedagogy by providing an evidence-based approach that captures educators' lived experiences in hybrid workshop-styled events and offering recommendations for educators for fostering effective digital pedagogy.

KEYWORDS

Effective digital pedagogy; teacher training; hybrid workshops; solutions.

INTRODUCTION

Digital pedagogy is the part of pedagogy that studies how digital technologies are used to best effect in teaching and learning (JISC, 2023). Digital pedagogy represents the forefront of pedagogical innovation (Istrate, 2022). It has become a popular concept and gained significant importance in recent years, particularly in response to the growing adoption of online and hybrid learning environments (Redecker & Punie, 2017). During the COVID-19 pandemic, digital tools and technologies transformed the educational landscape and continue to do so. Nowadays, educators are required to acquire new pedagogical skills to effectively incorporate digital tools into their teaching practices. As educators continue to improve their digital competencies and adopt technology, numerous educators face immense challenges in this process of adaptation due to several factors, such as limited technical proficiency, lack of formal training, or uncertainty (Koehler & Mishra, 2009). To address this gap, a professional development initiative was designed to train teachers with practical strategies for effective digital pedagogy. This initiative consisted of two workshops: a face-to-face training of teachers' event and a follow-up online workshop, both held with 25 teachers from 5 higher education institutions and 5 trainers from Europe. By exploring the effects of structured workshops, this study contributes to enhancing educators' understanding of effective digital pedagogy.

This article aims to investigate the prerequisites of effective digital pedagogy, address the solutions to the challenges of digital pedagogy, and present participant teachers' experiences and insights from the workshops. This study answers the questions: What are the prerequisites of effective digital pedagogy? How to overcome challenges when implementing an effective digital pedagogy? What were the participant teachers' experiences in the workshops?

The findings of this study contribute to the field of digital pedagogy by providing an evidence-based approach that captures educators' lived experiences in hybrid workshop-styled events and offering recommendations for educators for fostering effective digital pedagogy.

Effective Digital Pedagogy

Whether or not digital pedagogy is effective depends on numerous factors. Teaching with technology alone is not digital pedagogy, it shows irresponsibility to use technology without practical digital pedagogical skills (Fyfe, 2011). Introducing technology in pedagogy is regarded as an innovation as the learners are engaged and paves the way for a more personalized learning experience. It is essential to define, assess and develop teachers' digital pedagogical competence (Rawat, Tiwari, Sharma, and Chatterjee Singh, 2024). The effectiveness of digital pedagogy lies in developing the capability of educators to design, implement, deliver, and evaluate beneficial educational contexts, which are adapted to learners and the eras (Istrate, 2022). The European Digital Competence Framework for Educators (DigCompEdu) promotes digital literacy by focusing on six main areas, further organized into 22 pedagogical competencies (Redecker, 2017). A steady balance of cognitive and social skills are needed to design and deliver effective digital learning experiences (Garrison and Anderson, 2003). Therefore, effective digital pedagogy requires numerous pedagogical competencies. The aim is to utilize digital technologies to enhance and improve the education of learners.

According to Siemens (2005), connectivism is inherent to digital pedagogy and provides insight into skills needed for learners to flourish. The learners need to draw distinctions between information

and make connections when new information is acquired. Furthermore, digital pedagogy is also associated with constructivism, where knowledge is built by learners through interaction with digital tools, learning material, peers and so on (Vygotsky, 1978). In this way, learners can engage in learning activities that are specific to different learning styles and preferences.

Implementing effective digital pedagogy is crucial for the education of the learners. According to Koehler and Mishra (2009), TPACK framework stresses an educator's ability to integrate three types of knowledge—technological knowledge, pedagogical knowledge and content knowledge. Once an educator achieves a balance of the three types of knowledge, effective digital pedagogy becomes possible. Achieving this integration necessitates meticulous planning and continuous professional development. In a similar vein, Bates (2015) recognizes the necessity of aligning digital tools with sound pedagogical practices. According to him, educators often struggle to align technology with pedagogy, which results in superficial use of technology. Therefore, alignment of technology with pedagogy is of utmost importance to deliver effective digital pedagogy.

Iina Ryhtä et al. (2021) highlight the necessity of engagement, good use of digital resources, innovative learning methods, and facilitation of learners' digital competence as crucial prerequisites for effective digital pedagogy. According to Børte et al. (2023), three main prerequisites of effective digital pedagogy include simple definitions of assessment, better-aligned digital tools and pedagogical practices, and data literacy. Furthermore, challenges like lack of digital literacy—inadequate training in using digital tools (Tondeur et al., 2017) and digital divide—unequal access to technology (Selwyn, 2016) and barriers to the adoption of technology (Ertmer, 1999) also need to be overcome to achieve the goal of effective digital pedagogy.

Teacher Training in Digital Pedagogy

Empowering educators with the necessary skills and competencies needed for the digital world is inherent to achieving effective digital pedagogy. Professional development is crucial to equip educators with skills and confidence, and in this regard training of teachers becomes significant. According to Harris, Mishra, and Koehler (2009), blending technology with pedagogy is vital in teacher training. Their findings validate the TPACK framework, which provides a structure for educators to understand the relationship between three essential components—technology, pedagogy, and content. In teacher training programs, the focus should not be on technology alone but also pedagogy and content, and these elements should be integrated in practice.

Research has shown that training of teachers can significantly improve skills of educators' technology integration skills, and are more likely to incorporate technology effectively into their teaching (Kraus et al. 2014). Recent research has shown that effective implementation of guidelines for designing education prepares educators for effective online instruction (Keshavarz & Ghoneim, 2014). However, training of teachers events should provide opportunities for collaboration, peer support, and reflection among the educators (Punie & Redecker, 2017). Furthermore, according to Bates (2015), teacher training programs should allow educators to engage with technology and include practical experiences with digital tools. Luo, Murray & Crompton (2017) found that teachers' comfort increased while having practical experiences in authentic environments, resulting in a high level of engagement. According to Ertmer & Ottenbreit-Leftwich (2010), peer mentoring is a highly effective way to master digital pedagogy. Furthermore, workshop-based approaches have been

shown to enhance teachers' skills and confidence in applying technology to learning activities, providing practical experiences that bridge theory and practice (Başoğlu & Akkuş Çakır, 2026).

Offering hybrid model of training of teachers' events—face-to-face and online has the potential of combining best of both training methods and this research focuses on exploring the effectiveness of a hybrid model of teacher training, addressing a gap in the current body of literature on professional development of educators. While existing research stresses the benefits of in-person or online trainings (Ertmer & Ottenbreit-Leftwich, 2010), few studies directly integrate these formats in a single framework. By providing a hybrid learning opportunity to educators, this study builds on previous researches that stress the importance of flexible and context-specific trainings (Harris, Mishra, & Koehler, 2009) and contributes new insights into how hybrid models can enhance educators' engagement and integration skills. This study expands on current understanding by testing how face-to-face and online teacher training workshops combine the strengths of both training formats and foster deeper learning for educators and offer valuable implications for educators' professional development.

RESEARCH METHOD

Research Design

This study focuses on investigating the prerequisites of effective digital pedagogy, aims at finding solutions to the challenges of digital pedagogy, and takes insights from the training of teachers' workshops. This study utilized a qualitative research-method design. The research design consisted of two phases: a face-to-face workshop where gamification was used as an approach to study effective digital pedagogy and a follow-up online workshop, where teacher participants worked on the scenarios presented by the trainers and designed effective solutions to the challenges. Each workshop had its characteristics and a different approach to solving the challenge of an effective digital pedagogy. Furthermore, this study also presents findings from the feedback session, which highlights the participant teachers' experiences in the workshops.

Participants

A total of 25 teachers participated in the study, with an equal distribution of five teachers from each of 5 European higher education institutions. The participating higher education institutions were from Finland, Portugal, Spain, Sweden and Lithuania. The participants represented Finnish, Portuguese, Spanish, Swedish and Lithuanian experienced teachers, currently working at universities. Participants were selected based on their interest in developing digital pedagogy skills. The sample was diverse in terms of disciplines, familiarity with digital tools, and teaching experience. The different fields of study included business, languages, information technology, nursing and so on. While the participant group was diverse, they all shared a passion of enhancing their use of digital technologies in teaching. These workshops were conducted as a part of a European project, Hackathon and ICT-based Innovative Methodologies in Higher Education, which aimed to create more flexible, inclusive, and secure digital education. The project aimed at enhancing teaching and learning in higher education by integrating hackathons and ICT-based innovative methodologies to foster creativity, problem solving, and industry-relevant skills.

Workshop Activities

Face-to-face Workshop

The face-to-face workshop was held in April, 2023. It was part of a 5-day training of the teachers' event held in "The Polytechnic Institute of Bragança" (IPB), Portugal. The workshop was held on Day 2 and lasted over 5 hours. It included a combination of presentations and interactive discussions. The workshop utilised a gamification approach, where participants played a game. This game was based on the "New Business Game", developed by Aalto university in Finland. This game was adapted to suit the topic of effective digital pedagogy. The idea of the game was to create a path from an idea to effective digital pedagogy and the participants worked in five teams. The game used real-world challenge cards, which were presented to each team. The challenge cards were based on the five themes: motivation, interactivity, evaluation, communal working, and materials. A total of five cards were presented to each team and cards presented to each team were identical. They were not readily provided to retain the surprise element. The facilitator had designed them before the workshop and introduced them gradually one by one with the break of 15 minutes. The facilitator guided the session and coordinated research activities across all stages. The observational data were collected by two other researchers, not involved in the facilitation, and partly by the facilitator. The participants solved each challenge before it was time to draw a new challenge. At the end, each participant team presented their findings. This game covered the important topic of effective digital pedagogy, its characteristics and prerequisites. Table 1 shows the list of challenges provided to the participants.

Table 1: *List of challenges*

Challenge Theme: Motivation	Participants are reluctant to use a new digital platform during an online event as it is unfamiliar to them. The new platform and technical difficulties are hindering the successful implementation of the online event.
Challenge Theme: Interactivity	Participants are distracted during the online event and are not participating diligently. The coaches/ educators are finding it difficult to engage the participants and make them participate in the team tasks.
Challenge Theme: Evaluation	Start-up school students are creating a new digital service using hackathons with students from different universities. It is a part of a start-up course. Teachers are having trouble grading their participation.
Challenge Theme: Communal working	New online events are established in your university that target the same students for similar online activities.
Challenge Theme: Materials	With hundreds of teachers and their varying teaching materials, there has been no coherence in their online materials. This causes confusion among students and contributes to bad usability and lack of motivation.

Online Workshop and Feedback Session

The online workshop was held in May 2023. These sessions were an extension of the face-to-face workshop held in April. The online workshop was held on Google Jamboard, a digital whiteboard tool, which was later discontinued in 2024. This collaborative tool was presented to the participants. The teacher participants were divided into six teams. One page was dedicated to one challenge, and a different scenario was presented to each team. The different scenario themes were accessibility in

education, collaboration, engagement, evaluation, clarity, and conflict. These scenarios were created by the facilitators ahead of time and written on the Google Jamboard. The teams worked on the specific scenario provided to them. This workshop was held for almost two hours and at the end, the participants shared their findings. The goal of the online workshop was to support the teachers as they experimented with digital tools and presented solutions to specific scenarios through the reflection of their experiences.

The feedback session was held in June 2023 by the facilitators and it lasted two hours. During this session, all the participants were invited online on Zoom. The session started with presenting the findings from both workshops—face-to-face and online. After that, feedback was gathered from the teachers. Flinga, a digital collaboration tool was used to gather feedback. Furthermore, a constructive discussion was facilitated, with comments encouraged from all participants. The event was recorded for data analysis purposes after seeking permission from the participants.

Data Collection

The facilitators used ethnographic observation during the workshops to study the teacher participants' engagement and interactions. The data was collected flexibly. The cumulative hours of observation were nine hours for both workshops and a feedback session. In the face-to-face workshop, the facilitators observed group discussions, and the ethnographic observation provided insights into the execution of the gamification approach and how teacher participants approached and solved the challenges. In the online workshop, the facilitators collected the data from the Google Jamboard and reviewed discussion posts to assess participant involvement. In addition to the ethnographic observation, the face-to-face workshop presentation session was recorded. Also, there was one facilitator at each team table, taking notes. The empirical data collected was carefully reviewed by the researchers. The feedback session was also recorded and participants' reflections were gathered on Flinga.

Data Analysis

The qualitative data was analysed thematically, following the principles of qualitative content analysis. The recorded presentation file was listened to many times and the data was transcribed until quality data was collected. This data was then arranged into themes, following a coding process to identify key themes and patterns that participants experienced during the workshops and the challenges they identified. The coding was done inductively by using open coding with a grounded-theory basis. The main emerging themes were a) essential skills for digital pedagogy, b) effective teaching strategies c) institutional support, d) technology and e) collaboration. After categorizing the data, the connections were formed between categories, followed by identifying the relationship between the categories. Data triangulation was used to ensure that the findings were reliable and valid. Data were collected through multiple sources, such as observations, written statements by participants, and recorded workshop presentations. Allowing cross-verification of emerging themes helped improve the reliability. Validity was also supported by capturing unfiltered inputs from participants and maintaining transparency throughout the process of analysis. The qualitative analysis tool ATLAS.ti was used to analyse the data. Table 2 shows online workshop challenges and scenarios provided to teacher participants.

Table 2: *Challenges and Scenarios*

Challenge	Scenario
Accessibility in Education	Improve accessibility for students or faculty members who have disabilities such as visual impairments, hearing impairments, mobility impairments, etc., by using technology. Identify specific problems within the educational setting and find appropriate technologies/solutions that are accessible to all users.
Collaboration	Successful teams need to effectively collaborate in an online setting. Face-to-face events and live human experiences provide smoother collaboration compared to online events. Provide solutions/ examples for effective online collaboration so that teams can work effectively and complement each other.
Engagement	It is important to share good practices and maintain connections in order to ensure the successful implementation and supportive environment of Community of practice. Identify ways to generate interest among the teachers for sharing best practices.
Evaluation	With the rise of AI tools, educators are facing a problem to assess the student work due to the issue of plagiarism. Using such AI tools impact the student learning which can result in the loss of creative thinking. Identify solutions for student assessment and ethical use of AI tool.
Clarity	One of the vital tasks for organizing successful online collaborative events is planning and delivering better instructions to the participants beforehand. Better instructions result in the better execution for online collaboration. Identify ways to improve networking /team building, increase awareness of GDPR, improve understanding of digital tools and overcome technical issues.
Conflict	In an innovation process, chaos is inevitable. Handling chaos becomes complicated in an online setting. There could be issues like disagreements, misunderstandings, inflexible attitudes or mismatches in understanding/ skills within team members. Therefore, there is a need for developing appropriate methods/tools to manage chaos within teams. Identify solutions to overcome such challenges.

RESULTS

Prerequisites of Effective Digital Pedagogy

In general, teacher participants believed that for effective digital pedagogy, essential skills are needed. These skills are of various kinds like cognitive skills, social skills, skills for online teaching, psychological skills, time management, collaborative skills and so on. One participant stated, "The most underrated skills needed for effective digital pedagogy are cognitive and social skills." While another one mentioned, "Time management and digital competencies are much-needed skills."

Effective teaching strategies were also frequently emphasized by the participants. All teacher-participant teams suggested the importance of effective teaching strategies. One participant noted, "Teaching efficiently, planning the courses, scheduling, and good quality digital resources all contribute towards effective digital pedagogy." While another participant emphasized more on the teaching methods mentioned, "Gamification, challenge-based and problem-based learning methods are very impactful learning methods and should be incorporated in online teaching."

Institutional and administrative support was also emphasized by the teacher participants. One participant shared, "Receiving constant support from the administration is of utmost importance.

Many times the organisation does not even have the policies in place for digital pedagogy. The management should develop structures for ideal implementation."

Functioning technology and availability of suitable infrastructure were also seen as important by the participants. Some participants noted that teachers' knowledge of digital tools is as important as functioning technology. Moreover, the teacher's role is to select appropriate platforms and ensure their responsible use.

Lastly, teacher participants also highlighted clear communication and collaboration as important for effective digital pedagogy. One teacher participant stressed the importance of international collaboration. She mentioned, "International collaboration is very important for teachers' skill development." Another participant stated, "Clear communication is the key to effective pedagogy and every challenge can be resolved by communicating clearly." In Table 3, the main themes related to the prerequisites for effective digital pedagogy, the codes and the number of quotations related to each theme are presented.

Figure 1: *"New Business Game" posters created by five teacher teams during the face-to-face workshop.*

Table 3: *The themes, codes and the number of quotations under each theme*

Themes	Codes	Number of quotations under each theme
Essential skills for digital pedagogy	Cognitive and social skills for digital learning and consulting. Right attitude and skills for online teaching. Digital competence Psychological skills, time management, and autonomy. Coordination and collaboration among educators.	8
Effective teaching strategies	Clear planning, scheduling, and learning objectives Use of quality digital resources Gamification to enhance learning and motivation Meaningful assignments and knowledge-sharing practices Engagement through external partnerships and mentorship.	9
Institutional support	Constant support from the administration Institutional strategies for digital pedagogy Developing structures for ideal implementation Mentor programs and incentives (e.g., reduced teaching load, rewards).	6
Technology	Functioning technology and teachers' knowledge of digital tools. Clear rules for interaction, roles, and expectations. Good user interface design for better experience. Selecting appropriate platforms and ensuring responsible use.	4
Collaboration	Clear communication to resolve issues and structure learning International collaboration for skill development Supporting students through needs analysis (e.g., AI skills assessment) Competition and rewards for motivation.	5

Overcoming Challenges in Implementing Effective Digital Pedagogy

During the online workshop, teacher participants focused mainly on the challenges in the implementation of digital pedagogy. Each team discussed a separate challenge and a scenario related to that challenge and discussed ways to overcome those challenges. Some very interesting findings were highlighted by the teacher participants. For example, while addressing the challenge of accessibility, teacher participants stressed the importance of having a shared understanding and clear definition of accessibility and emphasized the need for accessibility trainings.

Table 4: *Solutions to challenges*

Challenge	Solutions
Accessibility in Education	Address physical, psychological, and technical accessibility needs. Define accessibility and ensure the understanding of key terms in educational settings. Provide language translation tools and set technological expectations for all users. Provide training for teachers on accessibility tools and offer mentorship for students and faculty. Use Virtual Reality for accessibility training and ensuring accessible communication tools.
Collaboration	Use of various communication tools. Conduct project meetings (online and in-person). Ensure pre-preparation for better engagement. Allocate effective collaboration time. Use online communication methods. Encourage asking questions.
Engagement	Host scientific lunch sessions online to share knowledge. Build dissemination and communication strategy for better outreach. Establish shared team rules for collaboration. Select the right platform for communication and engagement. Encourage interaction with participants to ensure active involvement.
Evaluation	Changing evaluation criteria and methods Updating institutional rules to the use of new technologies Raising awareness about the incorrect use of AI tools Training students on the (RIGHT) use of AI tools Teaching students how to ask right questions
Clarity	Setting the student expectations clearly at the beginning of the course. Creating opportunities for reflection & reminders regarding the progress at regular intervals Clear communication about GDPR guidelines & regulations Clear, accessible and written guidelines Group & self-assessments, feedback, peer reviews at the end to evaluate and gain insights to incorporate more clarity Clear written instructions on how to use the digital tools/platforms used in the course
Conflict	Preparation- learner background, fostering working in varied teams etc. Organising teamwork- assign roles/responsibilities, clear expectations, milestones, good ice-breaker activities, peer assessments etc. Tools - Sometics for team dynamics, brainstorming tools-Gitmind, padlet, gamified environment- Gathertown etc. Conflict monitoring and resolutions- proper support, conflict detection, conflict resolution etc.

Moreover, the challenge of collaboration requires pre-preparation and use of suitable collaboration tools. In addition to this, other thought-provoking suggestions were provided by the

teacher participants concerning the challenge of engagement. Hosting scientific lunches was recommended by the participants for knowledge sharing. Furthermore, for the challenge of conflict, clear instructions, the use of digital tools, and conflict detection and monitoring were emphasized.

Participant Teachers' Experiences in the Workshops

Based on the feedback gathered from the feedback session, face-to-face workshop and online workshop, participant teachers' experiences were gathered. Following are some facilitator observations and verbal teacher feedback.

Strong Engagement Among Participant Teachers

The game format of the face-to-face workshop engaged participants right from the start. Each team interacted well and engaged in peer discussions. Active involvement was shown by all team members. The nature of the game necessitated every team member to interact and participate actively. Teacher participants expressed that the workshop broadened their understanding of digital pedagogy as they were presented with challenges at every step, which made them focus on different aspects. Several teachers mentioned that the challenge-based gaming approach encouraged them to think in new ways. One participant stated, "Every challenge that our team received made us think out of the box and re-think the progress that we had made." Another participant stated, "I will use the same gaming approach to teach complex issues in my classroom as this approach enhances student engagement."

Improvement in Confidence from Start to Finish

It was observed that the workshop significantly increased teacher participants' confidence while participating in game-based learning on effective digital pedagogy. Initially, participants showed hesitation to play the game and struggled to understand the purpose of the game. However, as time progressed and as they solved the challenges, their confidence grew. One teacher participant stated, " In the beginning, we were confused and didn't know the way forward but now we realised that it was the best way to understand the challenge of digital pedagogy."

Effective Learning Methods

Challenge-based games and peer collaboration were the most effective learning methods that contributed to reaching the goal of solving the challenge of effective digital pedagogy. The teacher participants found the game-based learning approach a novel way to learn, while others appreciated the peer collaboration and sharing experiences most valuable. One teacher participant mentioned, "Gamification is the best learning method as it makes learning fun for the participants." While another participant mentioned, "We had a perfect team and I learned a lot from our interesting discussions."

Varying Digital Skills

The participant teachers formed a diverse group with varying digital skills. While some teachers were highly experienced with digital tools, others had minimal experience. This caused a bit of a challenge during the online workshop, some participants struggled with technical aspects but benefitted from the peer support. One participant mentioned, "I struggle to understand these digital tools as my background is in languages." Another participant mentioned, "Seeing my peers use digital tools gave me ideas for my teaching."

Flexibility

The online workshop provided flexibility compared to the face-to-face workshop. However, the face-to-face workshop engaged the participants in a better manner. One participant mentioned, "The online workshop allowed more flexibility, while the game-based workshop was more enjoyable and engaging."

Overall, the participants had a positive learning experience in both workshops. The feedback session revealed some recommendations for future workshops, such as more tailored content based on subject-specific needs, the need for prolonged support beyond the workshops like mentoring sessions, and more real-life classroom examples of digital pedagogy in practice.

This study builds on primary insights from earlier studies, such as those by Ryhtä et al. (2021) and Børte (2023) by confirming the significance of digital competence, assessment literacy, and institutional support. However, it advances the discourse by emphasizing the psychological and cognitive dimensions of digital pedagogy— focusing on skills, such as time management and emotional resilience, which are often only implied and not made explicit. Furthermore, this study offers a more enhanced understanding of effective teaching strategies through practices like gamification, mentorship, and external partnerships, focusing more on practical, engagement-driven, and socially connected learning. Further, this study also emphasizes structured collaboration, AI-based needs assessment, and international partnerships thereby reflecting an approach that integrates global trends. Lastly, this study makes a practical contribution to implementation strategies, such as clear institutional incentives, such as reward systems, reduced teaching load, and user interface design, and offers more concrete actions institutions could take to make digital pedagogy more effective.

CONCLUSION

This study investigates the prerequisites of an effective digital pedagogy and aims to find solutions to the challenges encountered during its implementation. The data was collected through the interaction of 25 teachers from five different higher education institutions and by direct observations of teacher-training workshops—face-to-face and online. The first teacher training workshop was held face-to-face and included a gamification approach, where teacher participants played a game. This workshop aimed to understand the prerequisites of effective digital pedagogy. Twenty-five teachers played this game, with one facilitator and four other mentors assisting in the process. The idea of the game was to create a path from an idea to effective digital pedagogy and the participants played the game in five teams. The participants were provided with five challenge cards gradually one by one. The participants solved each challenge before it was time to draw a new challenge. At the end, each participant team presented their findings. This game covered the important topic of effective digital pedagogy and its prerequisites and characteristics. The sessions were recorded and the data was transcribed and analyzed.

The second workshop was held online and it was an extension of the first one. However, in this workshop, the teacher participants worked on different challenges encountered during an effective pedagogy, and the teachers were presented with the following challenges: accessibility in education, collaboration, engagement, evaluation, clarity, and conflict. The participants worked on gathering the solutions to these challenges. Google Jamboard was used as a digital tool and working space for this workshop. At the end of the session, the teacher participants shared their findings. The

goal of the online workshop was to support the teachers as they experimented with digital tools and presented solutions to specific scenarios through the reflection of their experiences. In addition to these workshops, a feedback session was arranged for the teachers and its results were also analysed qualitatively. The results of this study indicate that the primary requirements of effective digital pedagogy are essential cognitive and social skills, effective teaching strategies, institutional support, technology, and collaboration. The results of online workshops showed the solutions to accessibility include addressing physical, psychological, and technical accessibility needs, clear definitions and training for teachers on accessibility tools. Other challenges require pre-preparation and the use of suitable collaboration tools for better engagement, clear instructions, and conflict detection and monitoring.

The participant teachers' experiences in the workshops were mainly positive and there was a strong engagement among participant teachers, improvement was seen in their level of confidence from start to finish. The participants found the learning methods an enjoyable way to learn. The results also showed that the participant teachers formed a diverse group with varying digital skills, which caused a bit of a challenge during the online workshop. The results showed that the online workshop provided flexibility compared to the face-to-face workshop but the face-to-face workshop engaged the participants in a better manner. This paper contributes to the field of digital pedagogy by providing an evidence-based approach that captures educators' lived experiences in hybrid workshop-styled events. It also offers solutions to the pressing challenges of effective digital pedagogy. The results of this study could be beneficial for educators who strive for an effective digital pedagogy. The prerequisites of effective digital pedagogy and solutions to challenges offer new perspectives. This study highlights that targeted workshops can enhance the competencies of educators, which are essential for distance education, fostering more engaging and learner-centered online environments.

This study has some limitations; for example, the sample size (25 participants) was small, which may limit the generalizability of the findings. Furthermore, the study was conducted in Europe, in a specific educational context, which may or may not truly represent the experiences of educators in different regions or disciplines. Nevertheless, its principles can be adapted to diverse educational settings, offering practical guidance and contributing meaningfully to the global discourse on effective digital pedagogy. A future study may be suggested, which could expand the sample size and include a variety of educational settings to further explore the effectiveness of digital pedagogy workshops. An international comparison might be beneficial in gaining a better perspective of the effectiveness of digital pedagogy.

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