Digital-Pedagogy.eu Institute for Education

Journal of Digital Pedagogy

2025, Vol. 4, No. 1, pp. 70-82

ISSN 3008-2021

doi.org/10.61071/JDP.2551

Generation X and Y Teachers' Perceptions of Digital Pedagogy: A Turkish Case Study

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Abstract: This study explores the perceptions of Generation X and Generation Y educators regarding digital pedagogy and its impact on teaching practices. Digital pedagogy, defined as the integration of technology into educational practices, is examined through the lens of two distinct generations, each with differing approaches to technology in education. Generation X approaches digital pedagogy cautiously, emphasizing the need to strike a balance between digital tools and face-to-face interactions. They view technology as a tool to enhance traditional teaching methods, with a strong focus on pedagogical alignment, security, and accessibility. In contrast, Generation Y embraces a more flexible, student-centred approach, seeing digital tools as integral to creating personalized and innovative learning environments. This generation is more comfortable with the rapid integration of technology and advocates for using digital tools to enhance engagement, adaptability, and individualized learning experiences. Both generations recognize the role of digital pedagogy in fostering 21st-century skills. However, both acknowledge the limitations of digital tools in promoting holistic personal development, emphasizing the importance of socio-emotional interactions and face-to-face learning experiences. Furthermore, the study examines the evolving roles of educators in the digital age, with Generation X envisioning teachers as guides and emotional connectors, and Generation Y viewing them as content designers and mentors. The findings highlight significant generational differences in integrating digital technologies into education, providing insight into the future of digital pedagogy and its implications for teaching practices.

Keywords: digital pedagogy, teachers, education, generations, qualitative research

Received: 18.07.2025. Accepted and published: 28.07.2025

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Citation:

Dogan, M., & Arslan, H. (2025). Generation X and Y Teachers' Perceptions of Digital Pedagogy: A Turkish Case Study. *Journal of Digital Pedagogy, 4*(1) 70-82. Bucharest: Institute for Education. https://doi.org/10.61071/JDP.2551

1. Introduction

The transformative power of digital advancements in education cannot be overstated. The increasing integration of technology into teaching and learning has challenged traditional instructional practices and opened new avenues for innovation. As schools embrace digital tools and platforms, educators are at the forefront of this transformation, focusing on ensuring quality, accessibility, and equity in education. Teachers' roles are constantly evolving to address contemporary educational challenges in a rapidly changing world. Expectations are placed on them to acquire new skills and stay up to date with emerging digital tools and pedagogies (Tan et al., 2024). Digital pedagogy combines technology with modern didactic methods, offering a flexible and adaptable framework for 21st-century learning (Voicu, 2025). In this context, digital pedagogy, which utilizes digital tools to enhance educational experiences, has become vital in shaping effective and inclusive learning environments in the digital age.

Digital pedagogy is a pedagogical approach that reveals the essence and structure of digital education, highlights the role of digitized educational processes in personal development, and develops practical methods and tools to enhance its effectiveness (Bećirović, 2023).

According to Istrate (2022), a more detailed and comprehensible definition was presented.

Digital pedagogy is the part of pedagogy that studies the design, implementation and evaluation of educational situations comprising a significant component of digital technologies, as well as the necessary conditions for their implementation – synchronous and asynchronous interactions in virtual and mixed learning environments, learning management platforms and tools, digital educational resources, educational usage of various digital applications and tools, virtual assistants for learning and teaching, digital competences of teachers, educational policies and specific programs (Istrate, 2022).

On the other hand, Voinea (2023) stated that today's society faces a new kind of generational diversity, which can be challenging to manage. The author argues that schools should serve as bridges between generations—open and inclusive spaces where learning, collaboration, and experimentation take place. In such environments, teachers from different generations can share perspectives and shape the values needed for personal growth and meaningful development. Additionally, according to Sözer (2021), generational differences can lead to mismatches in the group dynamics between students and teachers, highlighting the importance of generational theory in educational contexts. These differences shape communication styles, values, and expectations, influencing classroom interactions and collaborative behaviours.

As digital pedagogy becomes increasingly central to contemporary education, it is essential to acknowledge that teachers' engagement with these approaches may vary based on their generational backgrounds, professional experiences, and comfort level with technology. While younger teachers may exhibit greater fluency with digital tools due to growing up in a digital world, more experienced educators may approach digital pedagogy with different pedagogical priorities and technological competencies. By comparing the views, competencies, and teaching practices of teachers from different generations, this study aims to explore how generational differences impact the understanding, acceptance, and implementation of digital pedagogy in real educational contexts.

This study aims to examine the concept of digital pedagogy through a generational lens by examining the perceptions and practices of senior (X generation) and (Y generation) teachers. As part of this research, the following questions will be addressed:

1. What are the core elements that define digital pedagogy? How does this concept influence your understanding of teaching?
2. To what extent should digitalization be integrated into the learning process? In your opinion, is a fully digitalized educational process effective?
3. What is the role of digital courses in an education based on 21st-century skills? Do you think it is possible to foster personal development and attitudes solely through digital content?
4. What criteria do you consider when integrating digital technologies into your lessons?
5. How do teachers from different generations perceive digital pedagogy? Are there generational differences?
6. How would you assess your digital pedagogical competence? Are there areas in which you feel the need for improvement?
7. What direction will digital pedagogy evolve toward in the future? How will the role of teachers change?

2. Generations and Digital Pedagogy in Education

Pedagogy refers to the theory and practice of teaching and learning, encompassing the methods and strategies educators employ to facilitate student engagement and knowledge acquisition. It involves the content being taught and how it is delivered, considering students' diverse needs and learning styles. A key aspect of pedagogy is creating a learning environment that fosters meaningful learning, promoting critical thinking, creativity, and personal growth (Alexander, 2008). Additionally, Anderson (2020) defined effective pedagogy as a multifaceted approach that supports learners' intellectual, personal, and social development, preparing them for life. It involves engaging students with meaningful knowledge, ways of thinking, and discourse relevant to their contexts. Additionally, the author emphasized that effective pedagogy builds on learners' prior experiences and takes into account their personal and cultural backgrounds. It includes providing intellectual, social, and emotional support to facilitate progress, using formative and summative assessments aligned with learning outcomes, and promoting learner independence through diverse learning strategies.

In this regard, digital pedagogy has become an essential extension of traditional pedagogy, adapting age-old teaching methods to the digital age. This new approach emphasizes the integration of digital tools and technologies to enhance the learning experience (Coovadiaa & Ackermann, 2021). Moreover, digital pedagogy builds upon established pedagogical principles by incorporating technological innovations, encouraging active learning, student autonomy, and using digital resources to support cognitive and social development. (Dogan et al., 2024). The shift toward digital pedagogy began as educators recognized the potential of technology to enrich learning environments. By leveraging interactive tools and platforms, digital pedagogy enables more engaging and collaborative learning experiences (Lewin &Lundie, 2016). It allows educators to offer personalized learning paths, facilitate problem-solving activities, and create opportunities for students to engage in real-world applications. Through this dynamic approach, digital pedagogy provides a framework for evolving traditional teaching methods to meet the demands of the 21st-century classroom (Beetham & Sharpe, 2013). Additionally, research has also suggested that teachers' pedagogical beliefs are a significant predictor of their technology use (Ertmer et al., 2015).

A systematic review conducted by Tondeur et al. (2017) found a bidirectional relationship between teachers' pedagogical beliefs and the integration of technology. A teacher's belief can influence the type of technology they prefer and may be a barrier to technology integration. Conversely, integrating technology can also influence the teacher's pedagogical beliefs. Mishra and Koehler (2006) contended that it is not enough for teachers to possess technology-related competencies to teach effectively with technology. They highlighted that teachers need to understand and apply three knowledge domains (pedagogy, content, and technology) and the intersections of these knowledge domains. According to Tabesh (2018), a growth mindset is a key component of digital pedagogy. It encourages students to believe their abilities and talents can be developed through effort, effective learning, and perseverance. Digital pedagogy fosters such a mindset by creating a cognitively rich learning environment that emphasizes active engagement and exploration, utilizing various digital tools instead of relying on passive, one-directional instruction.

In today's rapidly evolving digital society, shaped by values such as dynamism, diversity, globalization, and increasing concern for sustainability and individual well-being (Voinea, 2023), education systems are under growing pressure to adapt. One key response to this transformation is the integration of digital technologies into teaching and learning environments. However, the effective implementation of digital pedagogy, a pedagogical approach that thoughtfully integrates digital tools and strategies, remains a complex and sometimes debated issue in educational technology (Tan et al., 2024). In this context, Akar (2020) defined the transformations in the learning and teaching approach as diversifying teachers' tasks and fields of responsibility and expanding them to include competencies such as utilizing technologies with pedagogical components, attending to students' differences, and teaching 21st-century skills to them.

This study is based on the generational classification by McCrindle and Wolfinger (2008), who developed a global generational framework. According to this classification, the generations are categorized as the Builders Generation, Baby Boomers, Generation X, Generation Y, Generation Z, and Generation Alpha. The study focuses on the general characteristics of Generations X and Y. Generation X includes people born between 1965 and 1979, following the Baby Boomer generation. This cohort experienced a period of relative peace and economic growth throughout their lives. They were the first generation to have access to computers both at home and in schools. They grew up in households where both parents were typically employed, resulting in less adult supervision (McCrindle, 2014). On the other hand, Generation Y, also known as Millennials, was born between 1980 and 1994. Unlike Generation X, Millennials grew up in

a diverse society and have not experienced economic recessions (Strauss & Howe, 2000). They were also part of the digital revolution during their formative years. Millennials are often seen as less focused on traditional career development, instead valuing flexibility, independence, management support, and engaging learning environments. They are often characterized by their idealism, optimism, self-reliance, and confidence, and are not afraid to embrace and drive change (Kraus, 2017).

Figure 1

Comparison of Generation X and Generation Y Teachers (Source: McCrindle, 2014)

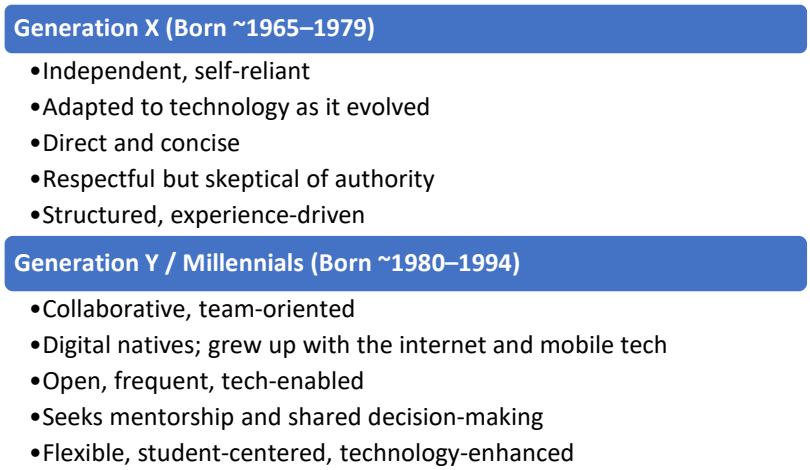

Figure 1 compares Generation X and Generation Y (Millennial) teachers in terms of their professional preferences and work styles. Generation X teachers are typically independent, value structure, and prefer formal communication and practical learning. They prioritize job security and maintain clear boundaries between their work and personal life. Generation Y teachers, on the other hand, are more collaborative, tech-savvy, and open to flexible, student-centred approaches. They seek purpose in their work, prefer immediate feedback, and thrive in digital, interactive learning environments. These differences suggest that educational leaders should recognize and address the diverse needs of each generation. By combining Generation X's experience with Generation Y's innovation, schools can create more effective and adaptive teaching environments (Polat et al., 2019).

3. Methodology

Research Design

This study employed a phenomenological design, a qualitative research approach. The primary aim of qualitative research is to focus on participants' experiences and perspectives, aiming to uncover their perceptions deeply and lived experiences regarding a particular phenomenon (Creswell, 2013; Denzin & Lincoln, 2011). As a qualitative research method, phenomenology describes the essence of a phenomenon through individuals' lived experiences (Patton, 2014).

In this context, the phenomenon addressed in the study is digital pedagogy. The study aims to reveal how teachers from different generations, based on their professional experiences, understand and conceptualize digital pedagogy, as well as how they integrate digital technologies into their learning processes. Phenomenological research emphasizes participants' perceptions and perspectives regarding a specific phenomenon, focusing on how they make sense of, experience, and describe it. Therefore, this study focuses on understanding how teachers experience digital pedagogy and how they interpret and express these experiences.

Study Group

The study group consisted of 30 teachers working in public schools within a large metropolitan province in Turkey during the 2024–2025 academic year. All participants were actively employed in urban public schools, an important contextual factor given the typically greater access to technological infrastructure, professional development opportunities, and policy implementations related to digital education in urban areas compared to rural settings.

Participants were selected using purposeful sampling, based on generational criteria. Teachers aged 40 and above were categorized as Generation X, while those under 40 were classified as Generation Y. Interview questions were initially sent via email, and participation in the study was entirely voluntary. Teachers who responded positively and

agreed to participate were included in the sample. Efforts were made to ensure equal representation from both generations, resulting in 15 teachers from Generation X and 15 from Generation Y.

Table 1

Demographic Characteristics of The Participant Teachers

Variable	Category	Generation X (*n* = 15)	Generation Y (*n* = 15)	Total (*n* = 30)
Gender	Female	8	9	17
	Male	7	6	13
Seniority	16-20	0	7	7
	21-25	7	0	7
Age	45-60 years	15	0	15
	30-44 years	0	15	15
Branch	English teacher	5	7	12
	Primary school Teacher	5	5	10
	Mathematics Teacher	3	0	3
	Science Teacher	0	3	3

As seen in Table 1, the data reveal notable generational differences between Generation X (ages 45-60) and Generation Y (ages 30-44) in terms of gender, seniority, age, and teaching specialization. In terms of gender, Generation X has 8 women and 7 men, while Generation Y has 9 women and 6 men, resulting in a total of 17 women and 13 men across both generations. Regarding seniority, Generation X members have an average of 21 to 25 years of experience (7 participants), while Generation Y members have an average of 16 to 20 years of experience (7 participants). Age is another distinguishing factor: all members of Generation X are in the 45–60 age group, while all members of Generation Y are in the 30–44 age group, creating a clear age division between the two generations. Regarding teaching specializations, English teaching is the most common for both generations, with 12 individuals (5 from Generation X and 7 from Generation Y) opting for this field. Primary school teaching involves 10 individuals (5 from each generation). Generation X is stronger in mathematics teaching (3 individuals), while Generation Y is notable in science teaching (3 individuals).

Data Collection

The data for this study were collected using two qualitative methods: semi-structured focus group interviews and open-ended questionnaires, both of which were designed to explore teachers' perceptions and experiences regarding digital pedagogy. A total of 30 teachers participated, including 15 from Generation X and 15 from Generation Y. Participants were initially grouped according to their generational affiliation to facilitate comparative analysis.

The focus group interviews were conducted first. Participants were organized into six focus groups, each consisting of five teachers, with a balanced representation from both generations. Each session lasted approximately 35 to 45 minutes. The interviews were scheduled based on participants' availability. Before each session, the researcher contacted participants individually to arrange appointments at mutually convenient times. This approach ensured voluntary participation and minimized disruption to their professional responsibilities. All interviews were recorded digitally, with the informed consent of participants obtained in advance. Data collection continued until thematic saturation was reached. By the fifth session, no new codes or themes emerged from the discussions. A sixth session was conducted to verify the consistency of recurring themes and to ensure the robustness of the findings.

Following the focus group sessions, participants were invited to complete open-ended questionnaires, which provided an opportunity to elaborate on their perspectives in written form. These questionnaires allowed for deeper individual reflection beyond the group setting. All responses were recorded in writing, and direct quotations from Participants 1 to 30 were preserved to reflect their authentic views accurately.

Data Analysis

The data analysis process was carried out using a combination of descriptive and content analysis, selected based on the nature and structure of the collected data. Descriptive analysis was employed for the focus group interview data, with responses organized under themes guided by the research questions (Yıldırım & Şimşek, 2018). A deductive approach was used, particularly in addressing the first sub-problem, to interpret the data by narrowing the content toward specific core concepts (Creswell, 2013). Content analysis was applied to the data obtained through open-ended questionnaires, following an inductive strategy in which codes and categories were derived from the participants' narratives rather than being predefined. The coding process began with the identification of meaningful data units,

which were then labelled as codes. These codes were grouped into sub-themes and overarching themes through the process of categorization and constant comparison, allowing patterns to emerge across responses. This approach is consistent with the principles of thematic coding, where coding and categorization provide a structured understanding of complex qualitative data (Gibbs, 2007). A preliminary coding framework, based on the theoretical background of the study, was refined during analysis better to reflect emergent data-driven insights (Patton, 2014). To ensure reliability and trustworthiness, coding was conducted independently by two researchers, with consensus achieved through a collaborative review and refinement process.

4. Findings and Discussion

In this section, the findings obtained within the research scope are thematically discussed and interpreted in light of the existing literature. The ways in which teachers from different generations perceive digital pedagogy, the strategies they adopt in practice, and their future projections are examined in a structured manner.

Table 2

Themes, Sub-themes, and Codes for Generation X and Y Teachers

Questions	Theme	Sub-theme	Codes (X Generation)	Codes (Y Generations)
Q 1.		Core Elements	Instrumental approach, guidance, controlled integration	Holistic approach, flexibility, student-centeredness
	Definition of Digital Pedagogy	Impact on Teaching Perception	Transformation from traditional, cautious progress	Role change, content designer, continuous learner
Q2.		Perceived Effectiveness	Face-to-face is indispensable, a hybrid model suggestion	Emphasis on flexibility, individualization, and a balanced model
	Degree of Digitalization	Digitalization Limits	Distance from full digitalization	Learning blended with technology
Q3.		Role of Digital Courses	Supports knowledge transfer, but not sufficient	Integrated teaching with skills and development of digital literacy
	21st Century Skills	Personal Development and Attitudes	Socio-emotional contact is necessary, and face-to-face interaction is required.	Digitally supported content, but interaction is necessary for empathy.
Q4.		Implementation Standards	Accessibility, security, and pedagogical alignment	Interaction, user experience, and student needs
	Technology Integration Criteria	Tool Selection	Functionality prioritized	Balance of innovation and pedagogical benefit
Q5.		Perception Differences	Cautious, experience-based, critical	Quick adaptation, bridge with digital natives
	Intergenerational Differences	Experience Growing Up with Technology	Met technology later, the effort to adapt	Digital youth, early adaptation
Q6.		Self-Assessment	Basic level proficiency, open to development	Intermediate/advanced level, need to stay up to date
	Digital Competence	Development Areas	Artificial intelligence, analytical tools	Gamification, data analysis, and digital ethics
Q7.		Evolution of Digital Pedagogy	Individualization, impact of AI	VR, AI, adaptive systems
	Outlook on the Future	Teacher Roles	Guide, facilitator, emotional connector	Content designer, data interpreter, mentor

As seen in Table 2, the teachers' views from Generations X and Y were analysed based on the themes, sub-themes, and codes derived from the research questions. These themes represent key focus areas, while the sub-themes provide more specific insights within each theme. The codes for each generation (Generation X and Generation Y) reflect the patterns and differences observed in their perspectives.

Q1. What are the core elements that define digital pedagogy? How does this concept influence your understanding of teaching?

According to the findings, digital pedagogy encompasses the tools used in digital learning environments and the underlying educational philosophies that support them. Generation X approaches digital pedagogy instrumentally, seeing it as a tool to enhance teaching with a focus on control and guidance.

The findings of this study reveal distinct generational approaches to digital pedagogy, which can be meaningfully interpreted through the lens of the TPACK framework (Technological Pedagogical Content Knowledge; Mishra & Koehler, 2006). Generation X teachers, who define digital pedagogy through an instrumental and guidance-based lens, tend to integrate technology in controlled and structured ways, aligning primarily with Pedagogical Knowledge (PK) and Content Knowledge (CK). Their cautious transformation of traditional roles into more technologically aware practices reflects a foundational level of Technological Pedagogical Knowledge (TPK), where technology is used to enhance, rather than redefine, teaching. In contrast, Generation Y teachers conceptualize digital pedagogy more holistically, embracing flexibility and student-centeredness, which illustrates a more developed TPK; they not only use technology but also redesign pedagogical strategies around it.

Polat et al. (2019) noted that Generation X teachers are more dedicated to lifelong learning and demonstrate a strong ability to adapt to new conditions. They are often open to collaboration with colleagues and receptive to feedback and guidance from school administrators and peer teachers. Mikušková (2023) found that while higher age alone is associated with a stricter interaction style and a focus on knowledge transmission and teaching goals, increased age combined with teaching experience leads to a preference for more interactive leadership and shared student-teacher responsibility. Additionally, a managerial teaching style becomes more common, and overall didactic competencies improve, except for a decline in uncertain and oppositional interaction styles. In contrast, Generation Y adopts a more holistic and flexible view, emphasizing student-centred approaches and adaptability. Gen X educators, influenced by traditional pedagogical practices, perceive the digital shift cautiously, requiring step-by-step integration. Gen Y, however, is more comfortable reimagining educators' roles as content designers and lifelong learners, reflecting the evolving demands of digital environments. Polat et al. (2019) also noted that Generation X teachers tend to be more flexible in professional environments, value practical experience, and are motivated to engage in continuous professional development, which contributes positively to school improvement and student outcomes. The participants expressed their views on the first question as follows:

Digital pedagogy can be defined as the integration of technological tools into education and their proper use. This concept is central to my understanding of teaching and is something I incorporate into my teaching process. I utilize digital technology in my profession to stay current and benefit from its features, such as visualization and appealing to multiple senses - Participant 5 (Generation Y, Math Teacher, 15 years of experience, urban public school)

With many years of experience in the classroom, I believe that teaching methods play a crucial role in achieving learning objectives. Traditional lecture-based methods have always formed an indispensable foundation; however, over time, I have started to incorporate some technological tools into my lessons. Rather than placing technology at the centre, I use it as a supportive tool when needed- Participant 1 (Generation X, English Teacher, 25 years of experience, urban public school)

Q2. To what extent should digitalization be integrated into the learning process? Is a fully digitalized educational process effective?

Both generations recognize the value of digitalization but advocate for different extents. Generation X supports hybrid models, viewing face-to-face interaction as indispensable for building rapport and ensuring clarity. Their cautious approach avoids complete digitalization, emphasizing balance. Generation Y recognizes the importance of balance but is more open to individualization and flexibility afforded by digital tools. They stress that a fully digital model may lack essential human elements, but appreciate how digital tools can be tailored to individual learning needs. In terms of perceived effectiveness, Generation X emphasizes the irreplaceable value of face-to-face interaction and favours hybrid models, indicating a pragmatic TPK application where technology supplements core pedagogical practices. Generation Y, however, views flexibility and personalization as essential, employing TPK to tailor instruction and respond dynamically to individual learner needs. On the limits of digitalization, Generation X resists complete digitalization, revealing limited integration of Technological Pedagogical Knowledge (TPK), whereas Generation Y balances digital tools with pedagogy, suggesting a more adaptive TPK usage (Koehler et al., 2013).

According to Coklar and Tatlı (2021), the X generation witnessed the emergence of digital technologies and experienced firsthand the transformation these innovations brought to social life. From their perspective, there is a

degree of scepticism toward the use of digital tools. As digitalization became widespread after their formative years, they adapted to it later. So, they tend to rely less on various digital technologies, including smartphones. Huang et al. (2024) stated that digital pedagogy is a teaching approach that transforms the entire learning process through digital technology, focusing on both teachers' abilities to deliver digital instruction and students' skills in communication, collaboration, and exploration. They emphasized that adopting new technologies should be driven by pedagogical needs that cannot be met without the use of technology. One of the participants expressed their view on the second question as follows:

Digitalization should be an important part of the learning process. Digital tools offer numerous advantages, including ease of access, the ability to learn independently of time and place, and support through visual and interactive content. They enable students to progress at their own learning pace, allowing teachers to monitor the learning process. However, a fully digitalized education process may lead to shortcomings, especially in socio-emotional development, face-to-face communication skills, and classroom interaction. Therefore, it is not entirely effective. A hybrid model that balances digital and traditional methods can be more effective. In this way, the benefits of technology are leveraged to support the student's holistic development - Participant 10 (Generation Y, Science Teacher, 17 years of experience, urban public school)

As an experienced teacher, I consider digital tools and applications to play a supportive role in enhancing the effectiveness of teaching and learning. When used appropriately and in the right context, these tools can improve learning outcomes; however, they are neither sufficient on their own nor suitable in every situation. Therefore, I believe that the use of technology should be shaped according to the intended learning outcomes, the students' age group and profiles, as well as social and regional conditions. Integrating digital tools into both in-class and extracurricular activities can be beneficial. However, a fully digitalized educational process may pose certain risks, particularly in terms of students' social and emotional development. I believe that for values such as face-to-face communication, empathy, and collaboration to flourish in students, a healthy balance must be established between technology and traditional teaching methods. As a teacher, my priority is to base my instruction on methods that allow for direct interaction with students and help me get to know them better, while using technology as a complementary tool to support this foundation- Participant 2 (Generation X, English Teacher, 23 years of experience, urban public school)

Q3. What is the role of digital courses in an education based on 21st-century skills? Can personal development and attitudes be fostered solely through digital content?

There is a consensus that digital courses play a significant role in transmitting knowledge and supporting skill development, but both generations acknowledge their limitations in fostering holistic personal development. Generation X emphasizes the significance of socio-emotional contact and face-to-face interactions in fostering empathy and positive attitudes. Digital tools alone are seen as insufficient. While Generation Y is more accepting of digital content, it agrees that interpersonal interactions are essential for emotional and ethical development. It advocates for digitally supported content that complements rather than replaces face-to-face experiences. Generation X teachers may occasionally contribute to challenging situations within the school environment. Positioned between older and younger generations, they can experience generational tensions, which may result in a sense of being caught in the middle.

When discussing the role of digital courses and 21st-century skills, Generation X emphasizes the importance of digital support for knowledge transfer while valuing socio-emotional contact as an indication of TPK awareness; however, with boundaries rooted in PK. Generation Y, by contrast, integrates digital literacy, empathy, and interactive content more fully, leveraging TPK to construct emotionally intelligent and technologically rich learning environments (Misha & Koehler, 2006).

Polat et al. (2019) emphasized that this feeling of "in-betweenness" can impact their professional dynamics and interactions. Regarding the outcomes reported by teachers, it can be said that their experiences with technology integration align with their pedagogical understanding and encourage the continuation of this understanding. It is also noted that technology can potentially change teachers' educational beliefs (Tondeur et al., 2017). Participants expressed their views on the third question as follows:

Digital courses are powerful tools for developing 21st-century skills, including critical thinking, problem-solving, and collaboration. Leveraging advanced technologies like interactive platforms, virtual simulations, and collaborative software, digital learning environments offer unparalleled opportunities for personalized and flexible education — Participant 25 (Generation Y, English Teacher, 23 years of experience, urban public school).

In 21st-century skill-based education, digital lessons provide students with unlimited access to information and opportunities to collaborate with different groups hold an important place. However, as a Generation X teacher, I believe that digital content alone falls short in fostering personal growth and development of attitudes. Therefore, it must be supported by face-to-face, active, and interactive practices. Technology should serve as a tool that supports teaching; maintaining balance is essential-Participant 12 (Generation X, Primary School Teacher, 24 years of experience, urban public school)

Q4. What criteria do you consider when integrating digital technologies into your lessons?

The integration criteria vary by generation. Generation X focuses on accessibility, security, and pedagogical alignment, prioritizing reliable tools that enhance existing teaching without compromising quality or equity. They tend to be more function-focused in their tool selection. Generation Y, however, prioritizes student experience, interactivity, and innovation. They strive to balance pedagogical impact and technological novelty, prioritizing tools that enhance engagement and meet students' needs. This generational distinction highlights the importance of contextualizing Technological Knowledge within teachers' values and expectations when integrating digital pedagogy. According to Kohler et al. (2013), the Technological Knowledge (TK) component of the TPACK framework encompasses teachers' ability to use technology to support digital pedagogy effectively. This includes selecting and implementing tools that align with instructional goals, enhancing student engagement and improving academic outcomes. Participants expressed their response to the fourth question as follows:

First and foremost, I consider the pedagogical objectives and learning goals. My most important criterion is that every digital tool I use genuinely supports student learning and aligns with the course content. I consciously try to choose technology not just for novelty, but to enrich the learning process and enhance student engagement—Participant 30 (Generation Y, Math Teacher, 18 years of experience, urban public school).

When integrating digital technologies into my lessons, I prioritize applications that support the lesson content, teaching methods, and learning objectives. Additionally, I focus on tools that increase classroom interaction, capture students' attention, and encourage their active participation in a fun and engaging way. I use technology as a supportive tool to facilitate teaching and involve students more deeply in the learning process- Participant 20 (Generation X, Science Teacher, 24 years of experience, urban public school).

Q5. How do teachers from different generations perceive digital pedagogy? Are there generational differences?

The differences are significant. Generation X tends to be cautious and critically reflective, relying on personal experience and emphasizing the challenges of adapting to newer technologies. Their approach is often grounded in proven practices. One possible explanation is that, as traditional teaching methods become less effective in meeting modern demands, learners need effective communication, critical thinking, creativity, innovation, problem-solving, negotiation, and collaboration skills. However, integrating digital technology into education remains a significant challenge. Many educators lack sufficient knowledge and confidence in using digital tools, which limits their ability to support students in acquiring the technical skills necessary for 21st-century learning (Viberg et al., 2023). Generation Y, having grown up with technology, displays faster adaptation and fluency in digital environments. They serve as bridges between older educators and digital-native students, leveraging their comfort with technology to innovate in pedagogical practice. Digital technology is an integral part of their daily lives, and they are accustomed to using screens. However, they were not born into the digital world; they migrated from the analog to the digital world. (Coklar & Tatlı, 2021). Participants expressed their views on the fifth question as follows:

Yes, there are significant differences. As members of Generation X, we adapted to digitalization later in life. Therefore, we sometimes experience hesitations and difficulties in learning. Generations Y and Z, on the other hand, have internalized technology more deeply; the digital world is a natural environment for them. We tend to approach it more cautiously and critically, but this also helps us to question the pedagogical value of digital tools more carefully. - Participant 15 (Generation X, Primary School Teacher, 25 years of experience, urban public school).

There are significant generational differences in the use of digital technologies. Older teachers often stick to traditional methods and use technology in limited ways, such as slides or digital textbooks. Younger teachers, like myself, are more comfortable with digital tools and tend to design interactive lessons that support 21st-century skills. We also try to carry these practices into our out-of-class learning activities- Participant 28 (Generation Y, English Teacher, 16 years of experience, urban public school).

Q6. How would you assess your digital pedagogical competence? Are there areas in which you feel the need for improvement?

Generation X self-assesses their digital competence at a basic level, though they are open to development. Their primary areas for growth include mastering artificial intelligence tools and analytical platforms to enhance learning analytics and decision-making. Positive or negative experiences with digital technologies may have influenced teachers' attitudes toward the use of technology in teaching. Bad experiences may result from low self-efficacy, a lack of knowledge, or inadequate peer collaboration (Väätäjä & Ruokamo, 2021). Generation Y rates themselves intermediate or advanced but emphasizes the importance of continual learning. They seek to deepen skills in gamification, data analysis, and digital ethics, reflecting an understanding of the evolving landscape of educational technology. Huang et al. (2024) defined digital pedagogy as having changed the way people acquire, interact with, and process knowledge, emphasizing that participation in the generation and construction of knowledge has become more significant than the knowledge itself. The participants expressed their views on the sixth question as follows:

I consider myself open to development. I have basic-level proficiency and knowledge of online platforms, video tools, and digital assessment systems. However, I need more training in AI-supported applications and data analysis. Staying current in this constantly evolving digital world is challenging but essential- Participant 29 (Generation X, Science Teacher, 22 years of experience, urban public school).

I make a conscious effort to use educational digital tools and platforms effectively, enhancing my course content, activities, and teaching methods through them. I also work on improving these skills by attending various programs and training. However, I see the need to develop further areas, such as creating personalized content and methods to support individual learning based on classroom interaction data, ensuring cybersecurity, and engaging with digital communities — Participant 24 (Generation Y, Primary School Teacher, 14 years of experience, urban public school).

Q7. What direction will digital pedagogy evolve toward in the future? How will the role of teachers change?

Future trends in digital pedagogy are pointing toward increased personalization and the integration of AI, VR, and adaptive learning systems. Generation X envisions teachers as guides and emotional connectors, focusing on maintaining the human element amidst technological change. Generation Y sees educators evolving into content designers, data interpreters, and mentors who use digital tools to create dynamic, responsive, and personalized learning environments. Both generations agree that emotional intelligence and adaptability will remain crucial in the future. Heard (2025) highlights that teachers face ongoing challenges balancing traditional and digital pedagogy. The report highlights concerns about the overuse of digital tools, which may limit human interaction, hinder non-verbal communication, emotional support, and social learning. One of the participants expressed their view on the seventh question as follows:

I expect digital pedagogy to move toward more personalized, adaptive, and AI-supported systems. The role of teachers will shift more toward mentoring, guidance, digital content design, and ethical responsibilities. Teachers will no longer be just lecturers but will become multidimensional educational leaders who manage the digital learning process. Adapting to this change is not easy, but we, as Generation X, are ready to take our place in this transformation. — Participant 28 (Generation Y, English Teacher, 13 years of experience, urban public school).

I believe that digital pedagogy, the human touch in education, will remain essential. As teachers, we will shift more into the role of a coach and guide, supporting students not just academically but also emotionally. To fulfil this role, we will need to adapt by improving our digital skills while maintaining the values that define meaningful teaching: connection, empathy, and presence. - Participant 6 (Generation X, Math Teacher, 25 years of experience, urban public school).

5. Conclusion

In conclusion, digital pedagogy represents a multifaceted approach that merges technology with educational philosophy, reshaping both teaching methods and learning environments. Generation X tends to perceive digital tools as enhancements to traditional teaching, valuing structure and face-to-face interactions. In contrast, Generation Y adopts a more student-centred and flexible approach, viewing technology as essential to personalized and innovative learning. Despite these generational differences, both groups recognize the importance of maintaining human connection in education, emphasizing the role of interpersonal relationships in promoting personal development and socio-emotional growth.

As digitalization continues to advance, both generations agree on the necessity of ongoing professional development. While Generation X focuses on strengthening their digital competencies, particularly in areas such as artificial intelligence and data analytics, Generation Y is more inclined to explore emerging technologies and innovative

applications in education. The future of digital pedagogy will likely be characterized by greater personalization, with AI and adaptive learning systems transforming how content is delivered. Teachers will continue to play a vital role as emotional connectors and mentors, while also evolving into content designers who utilize technology to create engaging and responsive learning experiences.

Limitations and Future Directions

This study has several limitations that warrant consideration. First, the small sample size of 30 teachers from Generation X and Y limits the generalizability of the findings. As a qualitative study focused on public schools in urban areas within a single province of Turkey, the results may not reflect the experiences of teachers in rural settings or other national contexts. Additionally, Generation Z teachers were not included due to their limited presence in the current teaching workforce in Turkey. Future research should aim to include a broader range of participants from diverse regions, cultures, and generations to gain a deeper understanding of the evolving digital pedagogical practices. Longitudinal and cross-cultural studies could further explore how generational and contextual factors shape digital teaching over time.

Despite these limitations, the findings offer practical implications for teacher education and professional development. Programs should address generational differences in digital fluency, learning preferences, and pedagogical approaches to support effective learning. Structured, hands-on training may better support Generation X teachers, while Generation Y may benefit from collaborative, tech-integrated formats. Intergenerational mentoring can enhance mutual learning and bridge digital competence gaps between generations. Professional development should be continuous, flexible, and aligned with frameworks such as TPACK to promote the meaningful integration of technology.

In this regard, teacher education programs within Turkey's higher education system should systematically embed digital literacy and generational awareness into their curricula. Tailoring course content to the distinct needs and learning styles of different generations can enhance engagement and effectiveness. Curriculum design should include modules on digital pedagogy, adaptive technology use, and generational communication strategies, supported by practical applications and micro-credentialing opportunities. Moreover, national education policies should promote institutional capacity-building to ensure that future teachers, regardless of their generational background, are equipped with the skills necessary to thrive in digitally mediated classrooms.

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Acknowledgements

Funding Information: This study received no specific grant from public, commercial, or not-for-profit funding agencies.

Competing Interests: The authors declare that they have no competing interests.

Author Contributions: Miray Dogan & Prof. Dr. Hasan Arslan: Conceptualization, Writing – review & editing. All authors have read and agreed to the published version of the manuscript.

Ethics and consent: 2025-YONP-0339, the Social and Human Sciences Ethics Committee of Çanakkale Onsekiz Mart University, Turkey, has approved the study, as per its decision dated May 16, 2025, with reference number 132/172.

Dr. Miray Dogan and Prof. Hasan Arslan delivered an oral presentation based on their paper titled "*Generational Perspectives on Digital Pedagogy in Education*" at the Digital Pedagogy: Innovations, Skills, and Technologies International Conference, held at SNSPA, Bucharest, Romania, on July 17, 2025. This presentation was part of the European Union-funded project (2023- 1-RO01-KA220-HED-000153589). Project Title: Digi-Peda – 21st Century Digital Pedagogies for Building Better and Sustainable Development in Higher Education.