

The Emerging Concept of the Digital Pedagogy

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Abstract: *This article presents the researchers' understanding of the concept of digital pedagogy. From the numerous literature and studies, the researchers extracted the emerging pedagogy concept. It includes orientation, practices, and competencies. As understood, digital pedagogy orientation is the perceived orientation of the teachers on the relative position of information and communication technology in the teaching-learning process. The digital pedagogy practice is the capacity of teachers to implement teaching-learning standards by assessing the extent of alignment of their professional teaching practice. Digital pedagogy competence measures teachers' information, communication, and technology skills in the teaching-learning process. Teachers' orientation, practice, and competencies provide an overview of how digital pedagogy is present and relevant in the learning process.*

Keywords— pedagogy; digital pedagogy; orientation; practices; competencies

1. INTRODUCTION

As education moves towards digitalization, technology has influenced much learning and resulted in the development of digital pedagogy, which has become a vital part of the learning process. Collaborative learning, blended learning, flipped learning, open conversation, creativity, and innovation are at the heart of education and need pedagogical assumptions based on technological inclination. The modern assumption of education requires an integral aspect of technologically bound and digitally mastered pedagogy.

Digital media and learning tools keep pace with innovations in learning technologies and enable learning according to own pace, understanding, and instantaneous feedback and evaluation. Innovation is significantly changing the manners of learning experiences. The emerging philosophy of technology in education prevails cultural milieu and draws a conception of technological change in education. Thus, transforming education and revolutionizing teaching and learning using various digital learning resources and radically restructured learning experiences in virtual spaces.

Meanwhile, the development of modern information and communication technologies raises the question of their most effective use in the learning process, though informatization brings the educational process to a new stage. Information and communication technologies (ICT) transform learning practices. However, being immersed in a digital society does not ensure the same opportunities related to access and use for all citizens. Therefore, people must master their languages and possess multiple literacy and communication competency.

New educational technologies in formal, informal, and non-formal educational environments revealed a need to revisit digital pedagogies to align with new technological capabilities and to consider integrating technology in education as more than just a tool for learning but as an active part of the pedagogy. Anastasiades & Zaranis (2017) probed a need for an evolution in the methods used to approach the learning process. Such innovative applications shall focus on

reflection and action to create problem solutions. The learning process is not solely an instructional technique, but it should be widely examined in the future. Teachers' attitudes towards technology integration are the key to the successful integration of ICT in education. Contemporary educational approaches draw on the principles of inclusive education that promote equal learning, participation, and opportunities for all students. Lifelong learning is necessary to support people to become part of the new systems in various areas of life.

The educational spectrum is moving towards the new quality teaching techniques by using digital pedagogy, a new way of engaging students with the curriculum. Pedagogy takes new ideas and practices and brings them together in new ways to solve problems that presently do not have adequate solutions. Digital pedagogy integration has a vital role in student-teacher enthusiasm in building productive connections to simulated conditions. The 21st-century learners embrace digital pedagogy approaches to influence their expectations with 24×7 multiple media technologies. Nowadays, technology has an effective communication interface with comprehensive cooperation and association.

However, Navarro et al. (2021) probed that teacher must harmonize content, pedagogy, and technology rather than learn how to use technology. Despite various educational policies and decisions, educators play a vital role in the adoption and development of any educational innovation; for this reason, educators are considered the essential factor in education reforms. Therefore, educators' attitudes toward technology integration are the key to understanding digital pedagogy (Anastasiades & Zaranis, 2017).

Likewise, Arcueno et al. (2021) stated that pedagogical challenges related to online learning include teachers' lack of knowledge and skills in using technology and professional development training. Their limited knowledge of digital pedagogy and access to online resources made planning content, assessment, learning activities, and virtual teaching challenging for all and daunting for some. Technological concerns related to connectivity and access disrupted curriculum planning and delivery. In a study conducted by

Granil (2021), the same argument among teachers in Marilao, all pedagogical knowledge domains were substantial. However, one indicator under the knowledge of technology was significantly least extent.

As a thriving contemporary approach, digital pedagogy is a less priority variable as many researchers focused on the traditional pedagogical stance. Hence, the intuition of technology ignites the relative inclination of teachers towards adopting the continuously changing curriculum. Research proved that teachers have lesser construct concepts of teaching with technology. To prevent this phenomenon, teachers need to encapsulate and understand the significant contribution of technology to the teaching and learning process. A deep understanding of one's digital pedagogical capability provides an avenue to rethink and validate the fundamental role of technology in education.

2. CONCEPTUALIZING THE DIGITAL PEDAGOGY

2.1 Background Literature and Studies

According to Nanjundaswamy (2021), Digital pedagogy is fundamental now as the world moves towards digitalization in all fields. Innovation has impacted a ton of learning and improved advanced teaching methods, becoming an essential piece of the present world. This digitalization prompted the academic sector to nominate ways relevant to technological advancement. Teaching and learning have become more sophisticated, triggering the education department to develop.

Doggets (2020) of the International Yeats Studies noticed that advanced innovation significantly changes how perusers experience. Meanwhile, Deyasi et al. (2020) stated that providing students access to digital media and learning tools (even to the extent of mobile apps) allows them to keep pace with innovations in learning technologies. It also enables them to learn according to their own pace, improve their understanding, and provide instantaneous feedback and evaluation. However, Blewett (2016) stated that traditional approaches are inferior to newer approaches and that "cutting-edge strategies" will invoke different and innovative pedagogies.

Bhagat et al. (2020) assumed that the Internet of Things (IoT) is a novel idea in computing and education. IoT connects the objects that surround the human being through a network. Further, Iot aims to provide real-time access to information anywhere and at any time. In pedagogy, IoT development helps learners learn effectively, efficiently, and flexibly. The digital era provides an avenue for innovative and intelligent education. Learners can access massive resources using various mobile applications through a wireless network. Nowadays, many electronic devices are associated with the worldwide web.

Lewin & Lundie (2016) drew attention to the emerging philosophy of technology, information theory, critical pedagogy, and educational philosophy issues. The prevailing cultural milieu draws a conception of technological change in

education. Technology itself has transformative power in education. Digital education revolutionizes teaching and learning using various digital resources and radically restructured learning experiences in virtual spaces. Digital devices have long since become embedded in contemporary life; educational institutions struggle to keep up with the pace. It suggests what Günther Anders once called a discrepancy between production and conception.

It signifies that, in a terrible sense, we no longer know what we do. However, the disproportion between action and conception is still of greater significance to present educational contexts. The Failure to understand the implications of our actions is a concern, but embedding that blindness, making that blindness a structural feature of inattentive and procedurally focused education systems, threatens to reinforce and extend that myopia. While virtual learning environments generate a great deal of interest, it is less clear that they provoke sufficient pedagogical and philosophical reflection. It is partly because of the assumption that technologies are tools, fundamentally neutral concerning the purposes for development and applications.

In education, informatization brings the educational process to a new stage of development. It allows taking advantage of the possibilities of new technologies in teaching students. The development of modern information and communication technologies raises the question of their most effective use in the learning process (Mamadieva et al., 2020).

Toktarova & Semenova (2020) pay special attention to the characteristics of the concept of digital pedagogy. The latter conceptualized the definitions of digital pedagogy, electronic pedagogy, virtual pedagogy, and techno-pedagogy. Results of the content, discursive, and idea synthesis stated that digital pedagogy consists of content-based, environmental, technological, and competency-based components.

Das & Bag (2020), in a book, Digital Pedagogy with ICT and Learning Technologies, stated that globalization drives remarkable changes in the education system through a worldwide paradigm shift in the teaching-learning process. Before digital technology, education evolved into a system that used paper technology in various highly sophisticated ways. It is to satisfy its mission of developing and recognizing knowledge and skills. Though many books on pedagogy, few works of literature on digital pedagogy are available in the market. The mode of the teaching-learning process continually changes from input-output-based education to outcome-based education. In recent years, various policies worldwide extensively reform education to bring about essential changes in terms of what to teach (content) and how to teach (knowledge delivery), and how to assess (student learning and the educational processes). Academic experts require the teachers to update and adapt to modern teaching-learning processes and technology innovations in this transition period. However, all concerns associated with education must enrich themselves with the knowledge of paradigm shifts concerning innovations in ICT and other learning technologies.

Devaki (2018) defined *digital pedagogy* as using digital elements to enhance or change the education experience. Digital pedagogy is not about technology; although digital delivery requires technology, it is about how we teach and how students want to learn, facilitated by technology. Some studies underscored that the E-content package has a more significant influence on the students' achievement in learning. In the implementation of learning, teachers can make the teaching-learning process more effective and interactive by using various teaching strategies to make the students' academic performance more meaningful and intrinsically motivating.

According to Almenara et al. (2020), information and communication technologies (ICT) have transformed literacy practices, earning great importance in functioning the so-called Society of Knowledge contexts. However, being immersed in a digital society does not ensure the same opportunities related to access and use for all citizens. Therefore, people must master their languages and possess multiple literacy and communication competency.

Knyazeva (2015) argued that the broader use of ever more advanced ICT in learning does not always suggest innovative pedagogical approaches. Digital pedagogy to be applied during the digital era should be a hybrid of traditional pedagogy fertilized by the approaches used for blended and online learning. Antoniou (2020) investigated new educational technologies in formal, informal, and non-formal educational environments. Investigation revealed a need to revisit digital pedagogies to align with new technological capabilities and user needs. Digital pedagogies need to consider integrating technology in education as more than just a tool for learning but as an active part of the pedagogy.

Regardless of its definition, learning is ultimately the learner's responsibility, not the teacher's. Today problem-based learning with appropriate ICTs has emerged to achieve learning objectives more effectively since the teaching-learning process has also become learner-centered. The educational spectrum is moving towards the new quality teaching techniques by using digital pedagogy, a new way of engaging students with the curriculum. One such instructional teaching strategy is a flipped classroom. It is a type of blended learning reversing the traditional learning environment by delivering instructional content, often online, outside of the classroom (Gouri, 2020).

According to Väättäjä & Ruokamo (2021), the global crisis brought by the COVID-19 pandemic provokes digital pedagogies rising interest. Moreover, the need to teach remotely. The two conceptualized and modeled digital pedagogy to provide tools for using digital technologies in teaching. Extracted from numerous pieces of literature, Väättäjä & Ruokamo (2021) enable to develop of at least three dimensions of digital pedagogy. These include pedagogical orientation, pedagogical practices, and digital pedagogical competencies. Using a systematic literature review of articles published from 2014 to 2019, Väättäjä & Ruokamo (2021) labeled pedagogical orientation as socio-constructivist and

student-centered in many cases. Further, pedagogical practices are the methods used to promote students' learning involving collaboration and social knowledge construction. Furthermore, technological, pedagogical, and content knowledge improved teachers' success in blending digital technologies into their teaching through high self-efficacy and strong peer collaboration skills.

Greenhow et al. (2020) examined how teachers, parents, and policymakers perceived and enacted remote digital pedagogy. Tensions arose between digital pedagogy, system rules, and teachers' digital skills, leading to different experiences for students. Parents have the increased responsibility for managing children's learning. Likewise, Digital equity issues prevailed. It includes technology access and social support for disadvantaged students from low-income families.

Lunevich (2021) postulated that innovation in pedagogy takes new ideas and practices and brings them together in new ways to solve problems that presently do not have adequate solutions. However, the development of the new pedagogical models involves identifying problems, testing the old practices, and suggesting novel practices. The study revealed that a critical digital pedagogy framework for many teachers' decisions to assess their teaching and their students' digital literacy is necessary.

Digital pedagogy integration has a vital role in student-teacher enthusiasm in building productive connections to simulated conditions. The 21st-century learners use digital pedagogy approaches to influence their expectations with 24x7 multiple media technologies. Nowadays, technology has an effective communication interface with comprehensive cooperation and association (Nehru, 2020).

Teaching and learning have become more sophisticated, requiring new pedagogy that allows for creative and intelligent education. Learners can use wireless networks to access massive resources. However, teachers have no full grasp of the role of technology in teaching.

The emerging educational philosophy, information theory, and critical pedagogy issues restructure learning experiences—the teaching-learning process shifts from input-output to outcome-based education. Digital pedagogy is not about technology but about how teachers want to teach and how students want to learn. Ideally, blended, and online learning should be combined. Problem-based learning with ICTs has emerged to improve learning outcomes. The pandemic has heightened interest in digital pedagogies to help students learn. In many cases, the pedagogy is student-centered and socio-constructivist. The use of digital pedagogy enhances student-teacher engagement in simulated situations.

Digital pedagogy has various offers in education. The only missing link is the understanding of the level of digital pedagogy among teachers. It is to provide a concrete and tangible blueprint to revisit, remodel, and recapture the programs necessary for the development of teachers.

2.2 Digital Pedagogy Concept

Digital pedagogy is a branch of pedagogical science that reveals the essence and regularities of digital education, the role of 'digitalized' educational processes in personal growth and develops practical ways and means of improving their effectiveness. It is also a pedagogical trend related to building the digital economy and digital society. Further, digital pedagogy embeds computer-based digital technologies in the art of learning, enriching the teaching-learning processes and assessment and builds knowledge through planning the educational system based on problem-solving and higher-order thinking skills. Furthermore, it provides high-quality education using information and communication technologies as a tool for creating new learning opportunities. It organizes a purposeful and systematic activity on human formation using information technologies and the Internet (Toktarova & Semenova, 2020).

Digital pedagogy uses digital elements to enhance or change the education experience. Digital pedagogy is not about technology; although digital delivery requires technology, it is about teaching and how students want to learn, facilitated by technology. Some studies underscored that the E-content package has a more significant influence on the students' achievement in learning. In the implementation of learning, teachers can make the teaching-learning process more effective and interactive by using various teaching strategies to make the students' academic performance more meaningful and intrinsically motivating (Devaki, 2018).

Digital pedagogy studies and uses contemporary digital technologies in teaching and learning. It is mainly a critical pedagogical approach, exploits thoughtfully digital tools in learning, and examines their impact on applied pedagogies. It allows learners to transform educational experiences using electronic tools. Meanwhile, digital pedagogy is a new paradigm that implies recognizing that access is the beginning of ICT policy and not its end because of education. Likewise, it involves technologies in the process of teaching and learning.

In this sense, Väättäjä & Ruokamo (2021) developed three dimensions of digital pedagogy. These were pedagogical orientation, pedagogical practices, and digital pedagogical competencies.

Based on the details and explanations mentioned earlier, digital pedagogy evolves into three concepts:

1. It pertains to the teacher's perceptions of the learning process, how individuals learn, and how they should be taught and counseled through technology.
2. The teacher's teaching methods enable learners' engagement with problem-based activities.
3. The teachers' skills to successfully integrate digital technologies into teaching and their impact on academic performance.

The schematic model shown in Figure 1 shows the concept of digital pedagogy.

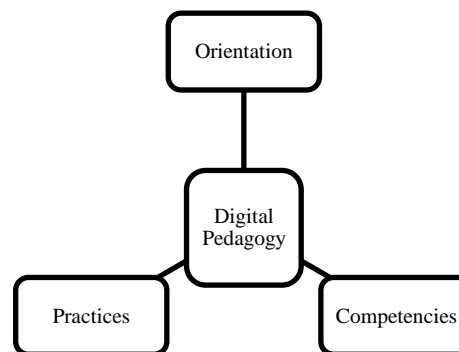


Figure 1. The Conceptual Paradigm

In this concept, digital pedagogy orientation is the perceived orientation of the teachers on the relative position of information and communication technology in the teaching-learning process. The digital pedagogy practice is the capacity of teachers to implement teaching-learning standards by assessing the extent of alignment of their professional teaching practice. Digital pedagogy competence measures teachers' information, communication, and technology skills in the teaching-learning process. Teachers' orientation, practice, and competencies provide an overview of how digital pedagogy is present and relevant in the learning process.

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