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Research Article

DIGITALIZATION AND PEDAGOGY: THE EVOLUTION OF TEACHING THEORIES IN THE 21ST CENTURY

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ABSTRACT

This article examines the evolution of teaching theories in the 21st century, with a focus on the transformative impact of digitalization on pedagogy. It explores how traditional pedagogical frameworks are being adapted to incorporate digital tools and methodologies, enabling innovative approaches to teaching and learning. The study highlights key challenges, including the digital divide and the need for educator training, while also emphasizing opportunities such as personalized learning and global connectivity. By analyzing contemporary trends and theoretical advancements, the article provides a comprehensive understanding of how digitalization is shaping the future of education.

KEYWORDS

digitalization, pedagogy, teaching theories, education technology, personalized learning, digital divide, 21st-century education.

INTRODUCTION

A process that must be addressed in the 21st Century incorporates the evolving pedagogical approaches of educators that integrate the stimulating process of computational devices, predominantly digital tools and the corresponding connection capability of modernized applications. Innovative hardware systems and modernized software schemes have contributed to paradigm shifts in interactive environments that academics have navigated in traditional settings. Consequently, a speculated contention that provokes multifaceted inquiries into the compulsive integration of theoretical instructions adjusting erudite curricula in an increasing digital

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community is put forth as a pragmatic theme for exploration (Wacnag Lidawan & Reyes Chua, 2018).

Widely acknowledged pedagogical paradigms changed over time. Established principia about theoretical instructions fluctuated in response to the revolutionized dissemination of other customs, traditions, and culture. Historical inquiry into pedagogy unveils trends of concurrent changes in learning methodologies and academic theories. Over the several centuries, patterns of transformations share parallels and disparity in diverse settings across territories and major instauration. In scholarly contemplations, pedagogical-epitomized documents from various periods connote recurring themes. Noteworthy inquiries transcend educational milieu, removals long before distinctive academic institutions established modern categorizations.

Historical Perspectives on Teaching Theories

Historically teaching theories have moved from a didactic view, teaching everything the day it must be learnt, to the current constructivist view, where learning is facilitated and students learn to use information. These changes have been paralleled by societal changes. In primitive societies, teaching was by the elders. The advent of reading and writing facilitated centralised teaching and an education industry grew, with teachers having the information. Apprenticeships supplemented formal teaching. Industrialisation increased the need for standardised knowledge and, as vast amounts of it had to be stored in the brain, the didactic view prevailed. In the 20th century, as computers became a low-cost information storage option, the current views emerged. A didactic view persists in many aspects of society. (Albion, 2015).

A societal view of the learning process gives some explanations to well-known results in the literature, such as that deep learners achieve better marks because teachers reward them for understanding or that students from collectivist societies hold a reproduction view of learning.

A better understanding of the societal view of learning should facilitate the design of new learning scenarios and technology-enhanced language learning applications. The exploration of generalisation to the traditional e-learning paradigm is one of the areas of future work. Culturally situated theory describes learning, and therefore teaching, as context-based activities. The internationalization of universities favours in-depth learning rather than factual teaching. It analyses answers to two questions asked to university students in five different countries. Firstly, it was asked how they learnt better and secondly for what reason. Statistical analysis of the answers highlighted a correlation between the way the students answer the first question and the way they answer the second one. The learning-teaching paradigm of the respondents is reviewed and questioned in the light of the analysed results. Given a didactic view of learning, the exploitation of information and of the knowledge that makes it

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meaningful are passed to a human educational element. In the extreme didactic scenario, learning is impossible without the presence of the teaching figure. (Drumm, 2019). The societal theory frame provided reveals the teaching theory described.

Traditional Teaching Theories

Digital pedagogy can be defined as the use, adaptation or evolution of various methods, strategies or practices employed in teaching, often in response to application of new media and ICTs in the learning environment. Society and technology are continually evolving, inevitably presenting challenges and opportunities for educators. Traditional concerns abound in education: how best to facilitate, manage and assess learning, so as to enable learners to meet subject-specific objectives as well as develop transferable skills and resources that may complement or lead to further opportunities. Since the turn of the 21st century, following the advent of the digital, entrepreneurial, and the impact of globalised economies, the educational landscape has undergone some significant and rapid permutations. A disconnect may be suspected between the evolved practices in the field and theoretical paradigms still being advocated in 'how-to guide' popular educational literature for staff.

Teaching is a historically founded profession, and traditional teaching theories have been well entrenched in education for hundreds of years. Teacher-centered instructional mode, direct teaching mode, Summative assessment, behaviourism, and common sense are part of these. In Chinese culture, rote memorization and uniform answer to questions are often regarded as favourable ways of learning, and these ways of learning are still used currently. These traditional teaching theories and practices are widely acknowledged in teaching training, extra-curricular work, also in other aspects of the education profession. The conceptions of traditional teaching theories, practices, and benefits in pedagogy have been deeply ingrained and difficult to challenge (Drumm, 2019). Traditional teaching theories state that the learner has already accumulated the knowledge necessary to fulfil the objectives, and that the knowledge-poor learner is not going to make the best use of instruction. Traditional teaching theory is predominantly passive in relation to learning and likes to give formal definitions of processes. Potential benefits in using traditional teaching methods may include that they can be seen as promoting accuracy, consistency and compatibility of learning, and also that uniform treatment of all learners dictates a semblance of fairness. Ensuring learners are well prepared enhances the speed and accuracy of decision-making without overloading the working memory. However, these theories may not cater for the well-documented diversity of aptitudes, experience and preferred modes of learning that learners demonstrate.

Emergence of Digital Pedagogy

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Digital pedagogy is a shift of the teaching principles from traditional teaching theories to the effect of the advancements in the technology era. The rapid progress and advances in the era of the technology have shifted and tender the move and finding in many sectors, including the sector of education. The influence of the technology now and then dedicates the reshaping of the educational practices which incidentally generates the question and curiosity of how the digital technology changes the educational practices and what practices do digital pedagogies suggest with the availability of the technology nowadays? The move of "chalk and talk" pedagogy has gradually become an antediluvian practice. The old practices of hand-written tasks of literacy are now no longer hive-off. Learning in classroom no longer a changeless teacher-focused manner; instead, it turns to more interactive and cross-interactive engagement between students. The learning and engagement act has now changed into an interplay engagement learning. Hence, it is the time to dictate the emergence of the digital pedagogy and to reflect on how far digital can create the new space of educational practices. Digital pedagogy itself can be said as the teaching pedagogy that is through the use of the advancing up-to-date technological devices. There are a few principles of teaching pedagogy catering through the advent of digital technology. Firstly, the upholding of more collaboration; secondly, the contentment of the cross-interactive engagement; fourth, the blossoming of engagement pedagogy or edutainment; fifthly, the improvement of feedback policy; sixthly, the personalized learning; and seventh, the enhancement of the learner-technology interplay engagement (Choon Meng, 2017). The most accustomed principles of the digital pedagogy are the collaboration engagement, the cross-interactive engagement, and the engagement pedagogy. The norm of assigned task in a form of cooperative grouping is often designated through the school load. With regard to the digital pedagogy, the availability of the digital devices has eased the use of technological devices which can help in the interplay engagement in conjunction with the interactivity of Internet (Wacnag Lidawan & Reyes Chua, 2018).

Key Concepts in Digital Pedagogy

This section starts by focusing on the fundamental concepts of digital pedagogy. It then examines two methods of teaching that are currently being adopted in educational institutions worldwide: blended learning and the flipped classroom teaching model. Importantly, the implications of both approaches for student participation and teacher identity are discussed.

The first term that must be addressed is digital pedagogy. In the 21st century, digital learning is closely related to how educators prepare their teaching materials and how they choose to engage with their learners. Defining digital learning or digital pedagogy purely in terms of technology, however, could risk

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overlooking more socio-cultural or more theoretically informed engagement with content, peers, and educators. In practice, digital learning and digital pedagogy have evolved into the multitude of new learning theories and teaching practices that reflect the complexity of digital technologies and networks. As a result, many scholarly works in the field have put forward different concepts and ideas, such as networked learning, online learning, connected learning, and open learning (Meier, 2016). Meanwhile, digital pedagogy is more interested in exploring the meanings and practices that underlie the relationship between digitality and pedagogy. As these key concepts in digital pedagogy, the text emphasizes digital collaboration, new literacy, netiquette, and critical digital pedagogy. In discussion, the section extends to two current teaching methodologies debated in digital learning: blended learning and the flipped classroom model (Zdravev et al., 2017).

Blended learning is one of the most popular and successful online and offline teaching methods in digital learning settings. It integrates face-to-face instruction with online learning and makes time expansion possible. In preparation, learners have an opportunity to study online resources prior to the timeline of weekly face-to-face lecture, and education is augmented by learning activities in the digital space. In extension, of late BlinK's approach to student-centered learning and practical orient-theory carousel are supported. Blended learning provides a flexible structure in which learners and educators interact liberally, potentially increasing learner venturing and reciprocation. Therefore, both learner participation and teacher identity are considerably transformed.

Blended Learning

In higher education, blended learning (BL) is now regarded as an essential pedagogy, moving away from its traditional focus on new technologies as a mechanism for the delivery of education at scale. This commentary addresses two main issues: the prevalence of uncritical consideration of BL with regard to student and staff communication, and the consequent failure to adopt appropriate pedagogies to maximize the opportunity presented by new blended formats. It is argued that student–staff communication is an essential component in education, necessary for a range of academic and welfare purposes; that this communication assumes a specific character in a technology-supported environment that provides challenges for communication management; that emerging blended pedagogy is at risk of obscuring the responsibility of institutions to underwrite traditional functions and interaction in strongly technology-mediated environments; and that, despite this, there is little evidence of a strategic response by universities or further education institutions. The paper concludes by proposing an enhanced role for course design templates as a means of facilitating better practice (P. Montgomery et al., 2015). Digital technologies have become an important part of modern living. The use of

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technology in the teaching and learning process has made education functionalities expand. The extensive use of web-based technologies has led to a growing popularity and acceptance of blended learning. In the higher education sector, there is an increasing discourse about the necessity of different blended learning formats within conventional studies. It is generally agreed that the online technology used in the course delivery needs to be integrated judiciously and creatively to meet pedagogical goals and be supplied with high quality course content. It is widely acknowledged that in such formats, face-to-face learning activities are maintained and enriched with an extended variety of online learning facilities. The pervasive expansion of the use of online technology drives the need for learning organizations to explore blended learning pedagogy more strategically. This commentary addresses the degree to which blended learning formats have not prompted corresponding conversations on how to optimize the quality and frequency of vital student and staff communication activities. In fact, it is found that this discourse is almost entirely absent from the public domain. Prior uptake of appropriate pedagogies may well have optimized a range of benefits associated with student–lecturer communication while avoiding some well-publicized pitfalls of early adopters. This is all the more pressing as there is a proliferation of cases, often unprecedented in their scale, of universities rapidly moving to adopt and expand the use of blended learning formats in the context of massively transforming shifts in higher education policy and funding (Sidek et al., 2017).

Flipped Classroom

The flipped classroom model represents a significant shift away from traditional pedagogical theory and practice. Rather than teaching in a conventional manner where instructional content is delivered in class, students are first introduced to new learning material through online lectures and readings. Classroom time is then reserved for interactive activities, allowing students to deepen their understanding of the subject matter through discussion and project work. One of the main benefits of the flipped classroom model is that learners have more control over the educational content and process. By deciding when and where they review lessons, students can engage with the material at their own pace and better retain information. The flipped classroom model can also personalize the learning experience by providing additional resources and tailored content for students who fall behind as well as foster autonomy and self-motivation to learn.

However, this approach could also put many students at risk of falling behind on curricular requirements if they do not properly engage with the educational materials before class time. The model also places a higher level of responsibility on the student to learn much of the new content on their own outside of class time. There are considerable disparities in

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technological access among students across the educational spectrum and not all students will be prepared for the flipped classroom model. According to the model, students spend the majority of their out-of-class studies introducing themselves to the material of the course—a paradigm shift from traditional teachings, where students consume learning materials under the supervision of the instructor. While many academics advocate the pedagogical theory of the flipped classroom model, there are no works that investigate the Ancient Greek Philosophical Doubling essay genre using the model. By investigating the use of the ancient Greek philosophical essay genre in Byzantine secondary educational texts of the Comnenian era within the framework of the pedagogical theory of the flipped classroom model, there is an innovative approach towards an ancient author's text addressing this genre. A flipped classroom explored on 8th-grade mathematics class showed a meaningful continuous increase in academic achievement from 2016 to 2019. Two flipped mathematics classrooms on 11th-grade and 12th-grade showed high academic achievement rates. A history lesson in an 11th-grade classroom showed a high achievement rate; translation of history into target language and an effective inquiry-based learning environment are suggested for success.

Impact of Digitalization on Teaching Theories

Advanced technology has engendered the transformation of the traditional educational concept, which stipulates a teacher-centered and linearly improved instructional model for its aspiration to a more sophisticated, nonlinear and personalized educational strategy. Traditional, linear or direct instruction appears to perform in the model of information transfer, when the student, as an empty calyx of knowledge, is supposed to ground knowledge from an information source, which is the teacher (Orosz et al., 2019). In advanced technological environments, the student has the option to seek information by suitable information devices, which enables a considerable alteration of the traditional teaching practices. Linearity is transmuted to a free model analogous to the connective of the net, which is totally characterized by large spatio-temporal universality. Some nodes in the net tend to be more relevant participants in the process, giving knowledge as well as the option to focus on assimilating a more comprehensive or complicated knowledge structure (Male, 2016). On the other hand, participation structures dynamic interrelations amongst nodes establish an altering model of the net, protecting the regionalized parallelism of interests. Meanwhile, the prevalent nodes could broadcast their interpretation, seeking an alteration of the discriminator interest. Conclusively, the relevance of information sources is a function of the spatio-temporal diffusion of interests and the nodes conform to knowledge at both the level of building and processing. In educational aspects, the student discovers a desired knowledge level in the

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connective net, recognizing the relevancy of information sources and building a processing function of intermediate databases sophisticated in the informativity of sources. In connective environments, the role of the computational terminals is not just using as a passive device to ground knowledge, but as a mean to pose and evaluate queries from sophisticated information sources. Thus, the processing function supplicates the basis for personalizing knowledge to become available.

Research material used inside educational environments reveals the process relevance of the model, since the pupils demonstrate a preference for information discourses among students, with the source of knowledge calibrating on the issue of understanding the knowledge material. Building a connective function of intermediate knowledge remains sophisticated in the familiarity of knowledge on the subject matter. Teacher usually provides all necessary assistance and choices to aid the student in his/her individual progress. Analogous to a higher cognitive processing, tutorial functions allopathic relations whilst directing the processing of activity and thereby helping the student building a potential for more sophisticated knowledge. Another appointment as a model of relevance grounds the relevance of agent based knowledge structures and the way they could be cherished to enlighten to become user gets available education.

Enhanced Student Engagement

Student engagement within educational settings has been significantly enhanced through digitalization (M. Aldhafeeri & A. Alotaibi, 2022). Many interactive digital tools and platforms provide opportunities for students to participate actively in the learning process. Students are encouraged to engage further with gamification platforms and multimedia resources and, therefore, become more involved and proactive. Additionally, collaborative activities are carried out online, where students interact with others to accomplish particular learning goals. Advances in digital pedagogy have led to a participatory culture, where students do not passively consume information but are engaged in self-directed, playful and social activities. With the spread of digitalization, technology is ubiquitously present in people's daily lives. This environment can be leveraged to create learning experiences 2.0. The learning experience is re-designed to focus on interactivity, connectivity, and immediate feedback. Enhanced engagement is recognized as a substantial factor related to improved learning in traditional and digital education systems. Furthermore, engagement strategies are re-evaluated to take into account they should be tailored towards the individual needs of diverse learners and because other praiseworthy practices have been dismissed. The most effective engagement strategies are probably those that focus on intrinsic motivation, such as the accomplishment of explicit and personal goals. Although more research is needed, the use of digital tools is likely to be beneficial

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in this regard. Nonetheless, there are outstanding issues that require further attention, such as the management of screen time to prevent potential negative side-effects, and the need to guarantee interactions are meaningful and aligned with outcomes.

Personalized Learning Experiences

In the 21st century, the digitized world changes not only the way in which information is accessed, processed and used, but also the role and relation of people with information technologies. In educational terms, since human cognition is deeply involved in learning, learning has been significantly affected by increasing digitalization (Ballard & Butler, 2011). Recent technological advancements have also reactivated ongoing discussions on the future predictions and trends in digital learning. In this regard, the evolution of AI, increased attention to social and emotional learning, and the setup of learning as play may profoundly change the context of education.

In this context, learning theorists and educators have developed several new pedagogical approaches and instructional designs to account for future challenges. 'Personalized learning' has become one of the most prevalent outcomes, as indicated in a recent whitepaper, linked to naturally embed personalization in learning, by enabling children to progress at their own pace, typically through effective deployment of digital technology. Here, with a focus on the 21st century, the evolving role of models, theories, pedagogical strategies, and instructional designs for facilitating 21st century skills in the scope of emerging digital solutions and technology-enhanced learning (TEL) aspects of preschool, primary, secondary, vocational, and higher educational settings, and tertiary/university educational context, respectively, are elaborated (Bucchiarone et al., 2022).

Future Directions and Implications

During the past couple of decades, digital technologies have played significant roles not only in individual lives, but also in societies and organizations locally and globally (Male, 2016). Being the number of the digital tools and formats that have integrated into disciplines and units, each teaching theory has consequently been co-evolved (Wacnag Lidawan & Reyes Chua, 2018). Around halfway through the 21st century, digital technologies became largely integrated into teaching theories. Along with their development, digital technologies have incited the evolution of more theories on and about teaching. The forms and formats of teaching are considered to be quite different from what they were like. Digital technologies have always been the chance of shaping pedagogy. With their appearance and development, computer technologies in the late 20th century have aroused expectations of revolutionizing many aspects of human societies including lifestyles, economies, enterprises, services, communication and the like.

The same is true of the revolution of teaching in which the expectations have been fulfilled. There have been

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numerous impacts on teaching and learning practices with the introduction of computers or digital technologies. It is undoubted that new opportunities of engaging in learning and teaching practices have opened up which have not been seen before. Moreover, this new medium of electronic education has influenced the quality and quantity of communication and collaboration among learners, teachers and learning materials. Discussion nowadays can be conducted both synchronically and asynchronously. Lectures, practical work, exercises, assignments and the like including multimedia-based teaching materials can be provided on-line. Patterns of learning have been largely changed and learners can explore knowledge and develop understanding beyond constraints of time and space.

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