DIGITAL PEDAGOGY. SYSTEMATIC REVIEW OF THE CONCEPT

Pedagogía digital. Revisión sistemática del concepto

Cristóbal SUÁREZ-GUERRERO*, Prudencia GUTIÉRREZ-ESTEBAN** and Desirée AYUSO-DELPUERTO**
Universitat de València. España.
**Universidad de Extremadura. España.*
cristobal.suarez@uv.es; pruden@unex.es; deayusodelp@unex.es
https://orcid.org/0000-0002-6558-4321; https://orcid.org/0000-0001-5328-5319;
https://orcid.org/0000-0002-6290-7391

ABSTRACT

Pedagogy is essential to understanding the increasingly complex relationship between education and digital technology. But what is digital pedagogy? Far from being a nominal question, this issue is fundamental to identify from which position we build, intervene or problematise technology in education. In this sense, the aim of this paper is to know what is meant by the term "digital pedagogy" in the scientific literature of the last two decades and to clarify the biases on which it is built, what it prioritises and what problems can be identified from its nuances. To this end, after analysing the presence of the concepts that could best illustrate the relationship between pedagogy

and technology ("digital pedagogy", "online pedagogy", "virtual pedagogy" and "ICT pedagogy"), a systematic review of the concept of "digital pedagogy" present in the research indexed in Web of Science (WoS) over the last two decades (2001 to 2022) was carried out following the PRISMA protocol. The analysis of the selected works shows that the definition of digital pedagogy revolves around three semantic fields: two are well defined and have a greater tradition – critical pedagogy and pedagogy understood as a didactic methodology – and the third is conceptually heterogeneous, with its own motivations and concretions. Although the definition of digital pedagogy moves strongly in the two dominant semantic fields, we must not overlook that the third group may reveal non-traditional or visible research problems for the two previous frameworks. In general, the task of defining digital pedagogy is in itself a pedagogical problem, because each semantic field implies an educational positioning in relation to what is supposed to be the task of digital pedagogy.

Keywords: pedagogy; digitization; education; educational technology; educational research.

RESUMEN

La pedagogía es clave para comprender la cada vez más compleja relación entre educación y tecnología digital. No obstante, ¿qué se entiende por pedagogía digital? Este problema, lejos de ser un tema nominal, es fundamental para identificar desde qué posicionamiento construimos, intervenimos o problematizamos la tecnología en educación. En esta línea, el objetivo del trabajo fue conocer qué se entiende por pedagogía digital en la literatura científica generada en las dos últimas décadas y esclarecer desde qué sesgos se construye, qué prioriza y qué problemas se pueden identificar desde sus matices. Por ello, tras analizar la presencia de los conceptos que mejor podrían evidenciar la relación entre pedagogía y tecnología ("digital pedagogy", "online pedagogy", "virtual pedagogy" y "ict pedagogy"), se realizó una revisión sistemática siguiendo el protocolo PRISMA del concepto predominante, "pedagogía digital", presente en las investigaciones indexadas en Web of Science (WoS) en las dos últimas décadas (2001 a 2022). Gracias al análisis de los trabajos que cumplían con los criterios de inclusión e exclusión se puede señalar que la definición de la pedagogía digital gira en torno a tres campos semánticos: dos bien definidos y con mayor tradición, como son la pedagogía crítica y la pedagogía entendida como metodología de enseñanza, y a un tercer grupo conceptualmente heterogéneo con motivaciones y concreciones propias. Aunque la definición de pedagogía digital se mueva nítidamente en los dos campos semánticos predominantes, no hay que perder de vista el tercer grupo que pueden poner a la vista problemas de investigación no tradicionales o visibles para los dos marcos anteriores. En general, ya que cada campo semántico supone posicionamientos educativos respecto a lo que se supone es la tarea de pedagogía digital, la tarea de definir pedagogía digital es en sí mismo un problema pedagógico.

Palabras clave: pedagogía; digitalización; educación; tecnología educacional; investigación pedagógica.

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1. INTRODUCTION

Education and digital technology follow different paths, marked by their own priorities, methodologies, and dynamics (Loveless, 2011; Ornellas and Sancho, 2015), but they are increasingly coming together when it comes to expanding the frontiers of education and educability through digitisation. This trend reached its peak when education, like other activities during the pandemic, opened up massively, globally and through trial and error to the search for a digital response to keep schools alive during the pandemic (Pokhrel and Chhetri, 2021). So much so that today we can now speak of the platforming of education as a distinctive feature of pandemic education (Rivas, 2021). But between education and digital technology, what is the role of pedagogy?

In general, educating is much more complex than using the most sophisticated technological application (Goetz, 2020). Many studies warn of the need for a pedagogy that focuses on educational development with technology and not only on technological consumption (Selwyn et al., 2020); other studies highlight the need to develop pedagogy as a basic conceptual framework so that technology can really work and be meaningful for the classroom experience (Suárez-Guerrero et al., 2016); and other studies focus instead on the legitimate dilemmas that can arise from building an exclusive pedagogy for a single variable (Meirieu, 2021). There are also those who assume that the role of pedagogy is to problematise the relationship with technology, in addition to prescribing solutions (Bykov and Leshchenko, 2016). Nevertheless, pedagogy is key to thinking about and using technology in education, as there is no educational development without pedagogical discourse, approaches, problematisation or pedagogical knowledge (Lewin and Lundie, 2016). As Selwyn (2016) points out, there is a need to approach "technology in education as something problematic. This is not to say that technology is a problem, but it does recognise the need to ask serious questions about the use of technology in education" (p. 10).

Consequently, and this must be made abundantly clear, the pedagogical work and the pedagogical debate on technology are inevitably linked to the debate on the aims of education, on the model of humanity we wish to see. But there is an obstacle: technologies are not completely neutral, they also have their purposes. This is not unique to digital technologies, it just means that purpose is an intrinsic part of any technological system, as already pointed out by Winner (1999): artefacts are also political entities because they have a purpose. Therefore, in the pedagogical reflection on the digital, as Sánchez-Rojo and Martín-Lucas (2021) point out, there is not only the debate on didactic effectiveness, but also the analysis of the teleological dimension. This is where digital pedagogy would be registered.

Not taking into account pedagogy, its tradition, sources or empirical basis – as Meirieu (2021) would put it, experiencing "pedagogical amnesia" – leads technology developers to "discover" ideas that have already been raised, but more importantly, it can lead to the omission of a holistic vision of the human project into which

technology fits and makes sense. Pedagogy – the conceptual framework we use in practice to evaluate why, for what, what, how, with whom, when or where to educate – becomes necessary and justified when technological splendour overshadows the educational project (Gros and Suárez-Guerrero, 2016). This means that, in addition to questions about the didactic effectiveness of technology in the teaching and learning process, pedagogy must address the anthropological-philosophical and ethical-political questions that are part of education (Higgins, 2021). In general, pedagogy reminds us of the need to ask what the human project is, a question that precedes another: what to educate with. The use of technology after a pedagogical exercise is a necessary process that is not only consistent with education, but also ethical and meaningful for the human project to which it belongs.

However, and this is the main contribution of this paper, what do we mean by digital pedagogy? First of all, this is not just an academic exercise in search of a simple definition. We want to know from which position we construct, intervene and problematise the relationship between education and digital technology. Understanding the discourse, the world of meanings with which the world is learned, means, as Wenger (2001) points out, understanding what to pay attention to, what problems to expect and what others to pay attention to. In this line, pedagogical approaches are key to understanding technological novelty in education (Brailovsky, 2018). From this perspective, understanding what we pay attention to when we talk about digital pedagogy – a concept that has been around for more than two decades (Cuff, 2001), has seen significant developments (Lewin, and Lundie, 2016) and is not without its own problems (Volkova et al., 2021) – is key to designing better educational experiences with technology (Williamson et al., 2020; Doucet et al., 2020).

This task of conceptual understanding is not trivial. Technology undoubtedly affects our lives, as Floridi (2015) points out, because information and communication technologies are not just tools, but increasingly affect "1. our self-conception (who we are); 2. our interactions with each other (how we socialise); 3. our conception of reality (our metaphysics); and 4. our interactions with reality (our action)" (p. 2). But this is not the end of the story. While it is true that there is a technological system that is not neutral, the idea with which it is represented skews its use. In the case of education, for example, using the internet with a vision and values based on a Google-based model is not the same as using it with a vision and values akin to those of Wikipedia (Ricaurte, 2016) or maker culture (Suárez-Guerrero and Gutiérrez-Esteban, 2018). From a social and cultural point of view, technology as a mediating tool allows for concrete action, but also for a form of representation that adds a purpose to its use. Therefore, there is a digital educational language that includes not only words, but extremely important frameworks of understanding, which, as Pangrazio and Sefton-Green (2021) point out, involve epistemological and ontological frameworks that allow us to theorise and act on how people learn in today's digital society. Since education today cannot be sustained without relying to a greater or lesser extent on digital technology, understanding the field

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of representation of educational action with - or in - digital support becomes a key issue for pedagogical reflection. This specific field is digital pedagogy.

In short, it is important to have access to digital technology in education, but it is also important to know what to do with it. This is where pedagogy comes in, both as a discipline and as an attitude, in order to understand the role, the limits and the possibilities of digital technology in education. In this sense, the aim of this paper is to know what the scientific literature generated over the last two decades understands by digital pedagogy, and to identify and clarify potential biases, priority areas and outstanding problems.

2. METHODOLOGY

To achieve this aim, and bearing in mind that this work is part of a larger effort to review the concept in other sources and other methodologies, we set out to characterise the concept of digital pedagogy present in the research hosted in the Web of Science (WoS) database over the last two decades (2001 to 2022). Although there are overlaps between Scopus and WoS that would allow us to work with either of them, in this review we have chosen to carry out the search only in WoS because, as Codina (2022) points out, WoS is not exactly a database, but rather several databases made up of several sub-databases (indexes). WoS has a wide coverage of the social sciences and humanities and has a proven prestige earned through regular quality control mechanisms. The idea is to start with WoS and then see how the concept of digital pedagogy is represented, for example, in other regional databases or even in less structured sources such as social networks.

The central question of this study is: what do we mean by *digital pedagogy*? But first we need to ask another question: why digital pedagogy? In order to clear this first sieve, we considered which concept could best represent the relationship between pedagogy and current technology, as it is better to narrow down the object of study before undertaking a review. In order to clarify this issue, four concepts were selected that were recurrent in the literature available to researchers whose area of research is educational technology. In order to decide which concept could best represent the relationship between pedagogy and digital technology, the dynamics of the four concepts were first evaluated in WoS and compared with the trend in Google.

In order to identify this concept as an object of study, we first searched the WoS Core Collection for the terms that could best represent the relationship between pedagogy and digital technology in education ('DIGITAL PEDAGOGY', 'ONLINE PEDAGOGY', 'VIRTUAL PEDAGOGY' and 'ICT PEDAGOGY'), as follows:

At the end of December 2022, a WoS title search for the term "DIGITAL PEDA-GOGY" returned 55 results. The first two documents using this term date back to 2001. Of the total, 33 are scientific papers. From the 33 items developed by 17 research fields, we found that 22 works belong to the field of educational research,

followed by 6 from the humanities, 5 from computer science, and the remaining 14 fields were represented by fewer than 4 documents.

Another search, carried out on the same date as the previous one, for the term "ONLINE PEDAGOGY" produced 29 results. The first document was registered in 2004. These 29 items were scientific papers from 16 fields of research. Of these, 23 were related to educational research, 7 to computer science and 14 disciplines were represented by fewer than three articles.

On the other hand, the oldest entry in the search for "VIRTUAL PEDAGOGY" dates from 2007. This search returned 4 documents, but only 2 of them were scientific papers related to 3 research areas. On the other hand, the first entry for "ICT PEDAGOGY" dates from 2005. This search yielded 7 entries, 5 of which were scientific papers related to 4 research fields. All these searches were carried out on the same date.

The quantitative presence of both "VIRTUAL PEDAGOGY" and "ICT PEDA-GOGY" in WoS is very low, so they were excluded, at least from this review study. However, we decided to study the concept of "DIGITAL PEDAGOGY" not only for quantitative reasons (it had more publications than "ONLINE PEDAGOGY"), but also because it is a relatively older concept, but still on an upward trend in terms of scientific production, whereas publications on "ONLINE PEDAGOGY" are irregular and on a downward trend. This situation, which favoured the decision to work on "DIGITAL PEDAGOGY", was verified thanks to the WoS results analysis tool, which showed that in the last 5 years (2018–2022) "DIGITAL PEDAGOGY" registered 24 papers, with a peak in 2021 (with 10 papers), and "ONLINE PEDAGOGY" registered 10 papers in the same period, with a peak in 2019 (with 5 papers).

Secondly, in order to confirm the trend observed in WoS on the topicality of the concept of "DIGITAL PEDAGOGY", we went on to find out whether this concept was commonly used, at least in Google searches. This was done using Google Trends. The terms had been searched in English, so we performed a global search in the field closest to pedagogy, which was "employment and education", because the others were too far away from the topic in question. We searched for "digital pedagogy", "online pedagogy", "ICT pedagogy" and "virtual pedagogy", limiting the results to the period 2004–2022. We found that "ONLINE PEDAGOGY" was a dominant term until 2008, but "DIGITAL PEDAGOGY" stood out in 2009 and, although it did not have a big increase, it remained a constant and more frequent search than "ONLINE PEDAGOGY". On the other hand, "ICT PEDAGOGY" disappeared, while "VIRTUAL PEDAGOGY" remained, although with a very weak presence.

After clarifying and verifying the relevance of the concept "DIGITAL PEDA-GOGY" found in both processes (WoS and Google), we proceeded with the systematic review process based on the PRISMA checklist (Moher et al., 2009), a systematic review process that has proven its effectiveness in analysing large amounts of scientific information in the social sciences (García-Peñalvo, 2022).

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Therefore, this study can be characterised as a PRISMA systematic review of the concept of digital pedagogy, with the aim of clarifying the definitions contained in the research papers indexed in the Web of Science Core multidisciplinary database.

At the same time, in order to go deeper into the concept of "digital pedagogy", we proceeded to retrieve as much information as possible in Web of Science Core by searching for "DIGITAL PEDAGOGY". The first phase in PRISMA, identification, yielded 197 results on "DIGITAL PEDAGOGY" between 2001 and 2022, two decades of development analysed. In this first set of papers, the first publication dated from 2009, and 46 research fields were represented – 71.21% of the articles were related to education, followed by 18.93% in computer science, 8.33% in arts, humanities and related fields, 8.33% in information sciences, and less than 4.54% in other disciplines.

Inclusion and exclusion criteria (Table 1) were applied during the review phase. These are not only crucial for a study of this type, but also necessary to ensure the reproducibility of the study (Gough et al., 2017). After filtering, 134 papers were excluded because they did not meet the criteria, e.g., they were conference papers, reviews, sources did not exist, they were published in other languages, or they only mentioned "DIGITAL PEDAGOGY" in the keywords or title without any further presence or development in the body of the paper. This process resulted in 63 papers for the next stage.

TABLE 1
INCLUSION AND EXCLUSION CRITERIA FOR THE "DIGITAL PEDAGOGY" STUDY

Inclusion criteria	Concept	Contains "DIGITAL PEDAGOGY" as subject in WoS Core Collection
	Type of document	Paper in peer-reviewed scientific journal
	Availability	Open or restricted access to the full text
	Type of study	Empirical/essay
	Year	From 2001 to 2022
	Language	English
	Content	Includes content on "DIGITAL PEDAGOGY".
Exclusion criteria	Concept	Does not contain "DIGITAL PEDAGOGY" as a subject in WoS Core Collection
	Type of document	Books, book chapters, communications...
	Availability	Partial text, or abstract only
	Type of study	Review or meta-analysis
	Year	Before 2001
	Language	Other than English
	Content	Contains "DIGITAL PEDAGOGY" only in the keywords/title.

Source: Created by the authors

Eligibility, the third phase in PRISMA, was carried out with the 63 papers obtained in the previous phase, but involved a more in-depth analysis of the full-text content, distinguishing between papers that developed the concept of "DIGITAL PEDAGOGY" explicitly, i.e., those papers that adopted a definition and made an effort to characterise the concept, and papers that developed their ideas around the notion of "DIGITAL PEDAGOGY" implicitly, i.e., those that used the term but did not propose or assume a clear definition, nor did they take a clear position. This process allowed us to identify two groups: 20 papers with explicit definitions of "DIGITAL PEDAGOGY" and 43 papers that assumed an implicit – sometimes diffuse – notion of "DIGITAL PEDAGOGY". This study is based on the group of papers that did provide an explicit definition of "DIGITAL PEDAGOGY" (Figure 1).

FIGURE 1
FLOW CHART OF THE FINAL ITEMS RECORDED FOLLOWING THE PRISMA MODEL
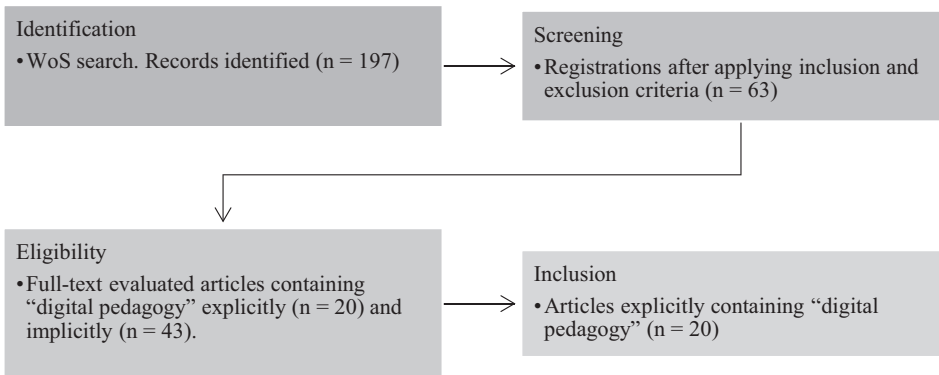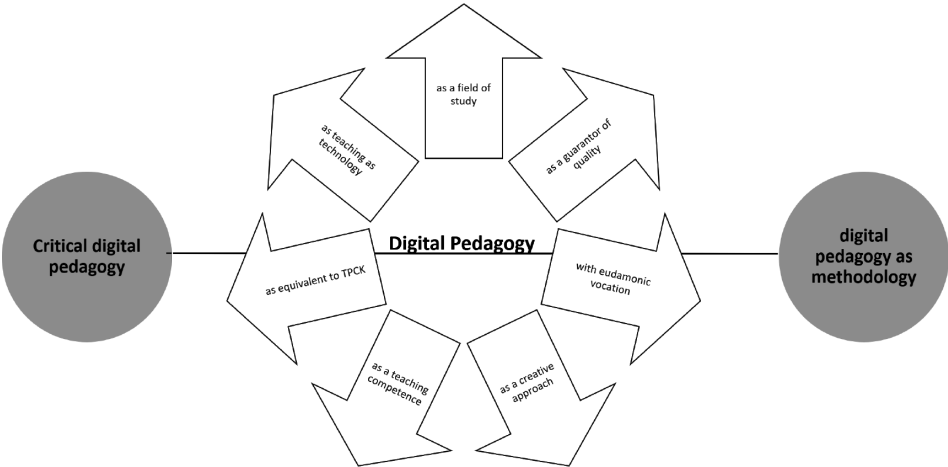

Source: Created by the authors

3   RESULTS

Definitions of digital pedagogy can be divided into three groups: two clear groups with a defined conceptual clarity and a heterogeneous group of definitions. On the one hand, there are definitions that are oriented towards a vision based on critical digital pedagogy and, on the other hand, those that assume digital pedagogy as a teaching methodology. In the middle are a number of definitions that extend, specify, or open up various aspects not covered by the two polar ends (Figure 2). However, all these groupings, which represent the semantic space in which the definitions of digital pedagogy move, imply different educational positions with regard to pedagogy and the digital transition.

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FIGURE 2
DEFINITIONS OF DIGITAL PEDAGOGY

Source: Created by the authors

The first group of definitions of digital pedagogy (Figure 3) understand the discipline as a teaching methodology that uses technology. This generality is assumed by definitions such as Naidoo (2020), who supports the following definition: "Digital pedagogy, which is a teaching and learning strategy using digital platforms, is seen as a technique to prevent the spread of the COVID-19 virus contagion (Murgatrotd, 2020)" (Naidoo, 2020, p. 1).

FIGURE 3
APPROACHES ON DIGITAL PEDAGOGY AND THEIR AUTHORS
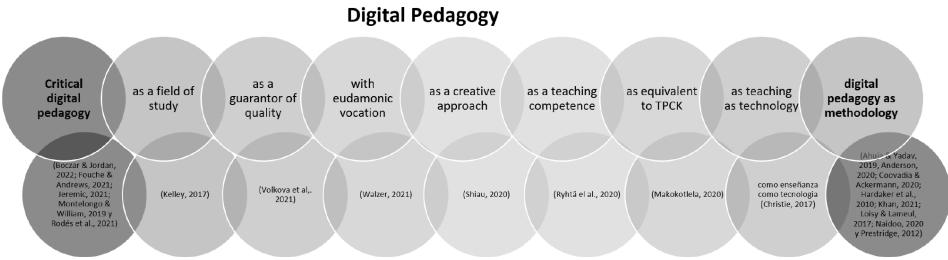
Source: Created by the authors

Prestridge (2012) offers a more explicit definition, suggesting that digital pedagogy is:

Student-centred activities that utilise digital resources can be described as 'Digital pedagogies' – teaching and learning practices that engage with digital technologies.

Exemplary who embed ICT in a seamless fashion have been defined as those who use ICT in learner-centred constructivist environments as opposed to traditional teacher-directed environments (Ertmer et al., 2007). (Prestridge, 2012, p. 450).

Coovadia and Ackermann (2020), meanwhile, understand that:

Digital pedagogy is a broad term which encompasses how teaching and learning can take place through digital modes of learning (Pink et al., 2016). Two important components of digital pedagogy are digital technologies and digital platforms, both of which are central in this study (p. 2).

Loisy and Lameul (2017), in the context of higher education, understand digital pedagogy as:

Digital pedagogy in higher education" has temporarily been defined as "a field of research and intervention that, in higher education, aims to render understandable training situations using the potential of digital technologies, considering the various dimensions that partially characterize it (including the political, cultural, engineering and technical dimensions) (p. 47; 2014, p. 200).

Khan (2021), on the other hand, speaks of: "Digital pedagogy (DP) is not exactly and only related to the use of digital technologies (blended learning/e-learning), rather about approaching and utilizing those tools in the given pedagogical perspective" (Khan, 2021, p. 618).

However, still within the idea of digital pedagogy as teaching using technology, some definitions focus on specific aspects of teaching and learning.

Hardaker et al. (2010) mention equity as a method in digital pedagogy:

For the purpose of this research 'digital pedagogy equity' indicates methods of instruction, or a style of instruction using digital technologies. Having an awareness and understanding of styles-based pedagogy is viewed as the basis for equity in pedagogy. Digital pedagogy equity can also be referred to as the correct use of teaching strategies through digital media. (p. 783).

They also point towards a digital pedagogy that responds to students' learning needs and demands, as Ahuja and Yadav (2019) note: "Digital pedagogy supports this idea of involving teachers and students as equal power sharers where learning experiences are designed according to the needs and demands of the learner" (p. 232).

After pointing out that "the term 'digital pedagogy' should not be conflated with the deployment of 'digital tools" (p. 453), Anderson (2020) suggests that such digital pedagogy should be open to learning processes beyond the curriculum, as follows:

Here again, the term 'digital pedagogy' should not be conflated with the deployment of 'digital tools'. Rather, the term refers to learning-focused values that have relevance

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not just for subject-specific education, but to personal and social processes and relationships and systems intrinsic to the learning process (James & Pollard 2011). (p. 457) (Anderson, 2020, p. 457).

The other group, which is very specific and quite present in the works analysed, consists of definitions that understand digital pedagogy as a critical vocation. That is, these definitions are not synonymous with didactics or linked to the search for technological efficacy in teaching and learning processes. Rather, they are linked to broader aspects that encompass ideological, social or cultural fields from holistic and interdisciplinary perspectives that broaden and make the object of digital pedagogy more complex.

This is the case of Jeremic (2021), who understands digital pedagogy as:

Critical digital pedagogy has the potential to empower digital users and use technologiesthrough a social justice lens. … Rather than focus on instrumental aspects in educating or critical (thinking) aspects in educating, a critical digital pedagogy requires a holistic approach that encompasses both. When developing a critical digital practice, I propose a holistic two-pronged approach that encompasses both the thinking and the doing.… Critical digital pedagogy encompasses both thinking and analysis, skill building (both critical digital literacy and online skills), self-confidence, and agility in the form of a critical digital fluency (pp. 71-72).

Meanwhile, Rodés et al. (2021) consider that:

Critical Digital Pedagogy implies centering practice on community and collaboration, remaining open to diversity, creating dialogues for teachers and learners as full agents, as a method of resistance and humanization (Morris & Stommel 2017). An appropriate, sovereign, and critical approach implies addressing digital literacy and the transformation of the curriculum (Goodson, 2005), as key dimensions of the Digital University committed to social justice (Johnston, MacNeill & Smyth 2018). A critical digital pedagogical perspective constitutes a central emancipatory element (Stommel & Morris, 2018). Critical Digital Pedagogy requires designing educational technologies in accordance with ethical principles and forms of property based on common goods (Lazarus 2019). This Critical Digital Pedagogy perspective includes the right to access, to privacy, to create public knowledge, to possess personal data and intellectual property, to financial and pedagogical transparency, to be cared for, to have great teachers and to be teachers (Morris & Stommel 2013). (Rodés *et al*., 2021, p. 10).

Boczar and Jordan (2022) suggest that the method is critical in all senses, from essential to interpretive and condemnatory elements, and that it assumes that:

…[c]ritical digital pedagogy is a method of empowerment" for students, who can learn more about themselves through the digital storytelling process… Strommel (2014) argues that "Critical Pedagogy is an approach to teaching and learning predicated on fostering agency and empowering learners (implicitly and explicitly critiquing oppressive power structures) (p. 231).

On the other hand, Fouche & Andrews (2021), recovering the work of the critical pedagogical tradition, understand that since:

In Freire's (2005) view, critical pedagogy takes into consideration that education is political, and that by its nature, it can disadvantage certain students. The purpose of literacy education, in his view, is to challenge and overturn both political and social inequalities. Critical digital pedagogy, then, acknowledges that any technological arte-fact or mode used for education purposes will have limitations, and that though digital tools will make some power structures visible, they are just as likely to obscure others (Waddell & Clariza, 2018) (Fouche & Andrews, 2021, p. 138).

Montelongo and William (2019) point out that:

Critical digital pedagogy argues that technology is neither neutral nor value free and should be examined through how technologies perpetuate social inequities in patterning and (re)producing dominant modes of relationality (p. 34) (…) critical digital pedagogy challenges our assumptions that pedagogical choices, tools or content knowledge being discussed are neutral and value free. (p. 35).

Between these two broad groups, digital pedagogy as methodology and critical digital pedagogy, there are unique conceptions to consider. Some of these highlight the conceptual dispersion of digital pedagogy and the complexity that the digital environment brings to the field. Without detracting from any of the definitions, up to seven perspectives can be identified in this heterogeneous group:

Christie (2017) raises a very important point in the distinction between "learn-ing WITH technology" and "learning AS technology", which involves viewing the digital as an environment:

Rather than framing digital pedagogy as "teaching with technology," it might instead be conceived to be "teaching as technology." Indeed, facile separations between analog and digital pedagogy risk devaluing the full complexity of epistemological engagements with learning tools. Digital pedagogy does not operate in or through a learning interface, but rather at its surface, where it comingles with the thinking, talking, feeling, histories, and embodied experience of physical individuals collaborating in a shared knowledge space. These dynamics play out through physical classroom objects, including textbooks, hands, whiteboards, eyes, keyboards, pens, desks, paper, and ears. (p. 31).

There is also a perspective on digital pedagogy that considers it equivalent to specific models such as TPCK. This bias is taken up by Makokotlela (2020) when working with e-portfolios as an evaluation tool to improve teachers' digital peda-gogy, assuming that:

Van Wyk (2017) states that, over the last decade, teachers have become more exposed to technologies that impact on classroom environments, teaching methods, strate-gies and techniques, and that this technological change requires teachers to have an in-depth understanding of digital pedagogy or technical pedagogical content

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knowledge (TPCK) (p. 112) ... "An e-portfolio should, as Van Wyk (2017) mentions, provide pre-service teachers with in-depth understanding of digital pedagogy or TPCK." (p. 123) "Van Wyk (2017) maintains that teachers are obliged to have a clear understanding of digital pedagogy due to technological changes in the teaching and learning environment. Maor (2017) states that e-portfolios are used to create digital pedagogies to enhance the students' learning experience. It is crucial that an e-portfolio is developed by pre-service teachersto enhance their technological pedagogy since the current teaching and learning environment requires such pedagogy. This suggests that digital pedagogy includes digital assessment in the ODeL context; hence, the introduction of an e-portfolio as an alternative method of summative assessment." (Makokotlela, 2020, p. 124).

There is also a focus on teaching skills. For instance, Ryhtä et al. (2020) define digital pedagogy as follows:

> The utilisation of digital technology, the digitalisation of learning environments and the increasing prevalence of distance learning require educators to be competent in digital pedagogy (From, 2017) ... Competence in digital pedagogy combines digital and pedagogical competence and is a requisite for the meaningful utilisation of digital technology in teaching (Cowling y Birt, 2018; From, 2017) (Rythä, 2020, p. 2).

The idea of digital pedagogy as a creative approach is evident in Shiau (2020), who emphasises the need for digital pedagogy as a catalytic element in his artistic work with technology:

> This approach reflects the suggestion of Peppler (2010) that digital art making is inherently interdisciplinary. Digital pedagogy, in this case, is geared toward reviewing how these paratexts affiliated with Chen – also new artworks in their own right – pull from diverse genres, such as visual arts, design and music to form a single creation." (Shiau, 2020, p. 56).

Walzer (2021) supports the idea of digital pedagogy with a eudaimonic vocation. He argues that:

> This article advocates for a compassionate eudaimonic pedagogy model that prioritizes healing and self-care for teachers and students and cultivating an ethos of critical digital pedagogy—itself a form of eudaimonia... (p. 1). [...] Cultivating eudaimonic pedagogy starts by acknowledging that human beings have a fundamental need to connect with others. This is much easier said than done (p. 3).

Volkova et al. (2021) discuss digital pedagogy understood as a guarantee of quality:

> The analysis of multiple interpretations of the term allows us to conclude that the basis of digital pedagogy is traditional pedagogy, which uses modern digital technologies to achieve higher educational results. Thus, digital pedagogy can be defined as a pedagogy that studies and describes the pedagogical process based on new digital technologies

used to ensure the education quality. The research focus shifts towards the quality of education and the problems of "digital pedagogy" (the difficulties that hinder learning achievements) (p. 5).

Kelley (2017), on the other hand, expects something more from digital pedagogy. She sees it as a field of reflective study that is broader than just teaching with technology:

> CAs David Lewin and David Lundie explain, "digital pedagogy" is an emerging field of study that combines four overlapping fields: the philosophy of technology and information theory, critical pedagogy, and educational philosophy [Lewin y Lundie 2016, p. 235] (Kelley, 2017, p. 5).

4.   DISCUSSION AND CONCLUSIONS

Returning to the question that motivated this paper, "What do we mean by *digital pedagogy*?", the answer we can give here, as far as the scientific literature indexed in Web of Science (WoS) over the last two decades is concerned, is that there is no uniform conceptual development. More specifically, the definition of digital pedagogy revolves around three semantic fields: two well-defined and with a longer tradition - this is the case of critical pedagogy and pedagogy understood as a teaching methodology - and a third consisting of a more conceptually heterogeneous group with different motivations and specificities. Defining digital pedagogy is therefore a pedagogical problem in itself. This requirement is not trivial, as approaching a work from a digital pedagogy, either as synonymous with teaching or through the lens of a critical digital pedagogy, will lead to different outcomes in educational research. However, in addition to these two semantic fields, where it is possible to appreciate more consensus and consistency, we must not lose sight of the third group, which has the potential to bring to light non-traditional or obvious research problems for the two previous frameworks that currently define digital pedagogy, by highlighting a specific element of the educational process, a singular educational task or a novel theoretical requirement.

Sooner rather than later, developments in digital pedagogy will have to face the challenge of definition. Knowing what we mean by pedagogy, what we do when we do pedagogy, is not easy to characterise. It is epistemologically complex and, strictly speaking, it is its own line of research (Díaz-Soler, 2020). In this attempt to understand what the scientific literature means by digital pedagogy, this work highlights the existence of two classical lines of thought. The first, more common in the Anglo-Saxon world, understands "pedagogy" as a synonym for teaching and learning methods (Watkins and Mortimore, 1999), and the second, more critical, aims to understand education as a political fact. In addition to guiding learning, it is expected to clarify questions about the meaning of education (Giroux, 1997). This division between pedagogy as methodology and critical

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pedagogy remains in the works analysed on digital pedagogy. However, as can be seen from the results, there are a number of nuances between the two main conceptions of pedagogy that reveal a transitional stage in the development of the discipline. In other words, after two decades, there are two consolidated visions of digital pedagogy in the academic literature, but there are also other emerging visions.

However, whether as a consolidated or emerging vision, each approach influences the problems to which attention is directed. This is also reflected in practice, as both teachers and policy makers prioritise different actions, consistently or otherwise, based on their understanding of what digital pedagogy is and involves. For example, under the umbrella of digital pedagogy it makes sense to think about the effectiveness of technology, what works in learning. From the perspective of critical pedagogy, on the other hand, it may be more relevant to work on the ethical dilemmas raised by the use of technology in education. These conceptual nuances are by no means irrelevant to teachers' reflections and practices when using technology in their work (Heitink, et al., 2016).

Thus, it is not possible to speak of one single digital pedagogy, because the definition of such a concept, both in the theoretical framework in which the research problems are identified and analysed, and in the operational definitions on which the data collection tools are based, makes it difficult to identify a single definition of the term. It is therefore not possible to consider different studies on digital pedagogy as equivalent and to speak of a single theoretical-empirical evolution in a the research line labelled as digital pedagogy. While it may be plausible for a line of work such as *digital pedagogy as a methodology* to investigate the educational effectiveness of a particular virtual environment for cooperative group work, *critical pedagogy* might focus on the problem of the use of data in cooperative mediation within the same platform. However, these two cases fall under different research frameworks and methodologies, and this has implications for pedagogical development.

The work on digital pedagogy that focuses on providing effective strategies for the digitisation of educational institutions (Bećirović, 2023) and the work that encourages the search for the meaning and educational value of such digitisation in the world (Stommel et al., 2020) have different meanings. As Pangrazio and Sefton-Green (2021) point out, these meanings have epistemological and ontological connotations that influence pedagogical work and, of course, demarcate differentiated lines of research and programmes. Neutral and uncontaminated digital technology is not only part of the learning process, but also the idea from which it is conceived. For this reason, it is necessary to clarify the conceptual umbrella under which digital pedagogy is carried out, even in its post-digital reconfiguration, as pointed out by Jandric and Hayes (2022), because, according to Ornellas and Sancho (2015), teaching in the classroom is based on these pedagogical approaches to technology.

However, the limitations of this work are obvious, as it focuses only on the analysis of scientific literature. Therefore, future lines of inquiry include educational regulations, teacher training, adoption of the concept by teachers and families, related commentary in the media and social networks, and the priority given to research on digital pedagogy in postgraduate programmes. This whole narrative is the key to understanding the situation in which pedagogy as a discipline finds itself, and what tasks are necessary to understand the technological novelty (Brailovsky, 2018).

This suggests the need to develop a pedagogical framework for digital technology. Indeed, but under which criteria? This paper shows that this question is not trivial and that the potential range of options can have significant implications for educational practice and for research, which will have to deal with new problems. For pedagogy, as well as for educational policy and management, defining digital pedagogy is itself a problem that needs to be addressed in both educational research and practice. Technology is not enough to define digital pedagogy, we need a conceptual vision that "tries to overcome Manichaeism, consumerism, neutrality, technocentrism, determinism or technological solutionism, and to opt for a profound, interdisciplinary and ethical view that always reminds us that the digital is behind the most humanising project that justifies it, education" (Suárez-Guerrero, 2023, p. 11).

Without a conceptual framework, it is not possible to develop a coherent and effective pedagogical approach to digitisation. However, this pedagogical construction of the future, as Meirieu (2021) points out, should not come at the expense of tradition, of what has already been developed; on the contrary, that would mean losing perspective due to digital novelty. It is therefore important for digital pedagogy to be able to value the technological applications that offer new ways of doing things, but also to pay attention to the ideas – definitions, expectations, myths or dilemmas – from which they are conceived. This kind of knowledge is of real value for educational practice, as it plays an important role in the representation of technology in education (Blau et al., 2018).

This can be achieved by making room for new spaces and times for working together, sharing experiences and learning, with new methodologies and activities that generate narratives of experience, dialogue and horizontal participation (Ayuso del Puerto and Gutiérrez-Esteban, 2022). We need a context in which the pedagogical relationship, as we have said, is built from "us", from our relationship with others.

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