

# Introduction

## Digital Competence for Teachers: Perspectives and foresights for a new school

Competencia digital docente: perspectivas y prospectivas para una nueva escuela

Guest-edited special issue:

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Teachers' Digital Competence (TDC) is one of the most important aspects that educational research has reflected on in recent times. Taking the European Union's European Framework for the Digital Competence of Educators (DigCompEdu) as a reference, different institutions have identified and developed key competencies that students must have acquired by the end of compulsory education to facilitate their personal and professional integration into the digital world.

However, different studies indicate that digital competence among teachers in Europe currently falls short and that teachers need more training and support to implement ICT in teaching and learning processes (Fraillon et al., 2014; OECD, 2014). In addition, an examination of the literature on the position of TDC in initial teacher training (Røkenes & Krumsvik, 2014) reveals that there are still few studies on education students' professional Digital Competence or on how it is developed in teacher-training processes (Tondeur et al., 2016). Little by little, however, this trend is beginning to change, as this special issue proves, and new models that attempt to unravel the different dimensions of Digital Competence are being proposed—for example, the aforementioned DigiCompEdu or the TPACK model by Mishra and Koehler (both in an international context). These have been reflected in other European references such as: “The Norwegian Digital Competence Framework for Teachers”, by the Norwegian Centre for ICT in Education; Ireland's “Digital Learning Framework for Post-Primary Schools”; and, in Spain, INTEF's “Common Framework for Teachers' Digital Competence” (Manso & Sánchez-Tarazaga, 2018).

The PEAT model (Figure 1) has emerged within this context. It was developed under the “Developing ICT in Teacher Education (DiCTE)” Erasmus+ Project (whose team comprises Patrick Camilleri, Juan Carlos Colomer, Bård Ketil Engen, Tonje Hilde Giæver, Greta Björk Gudmundsdottir, Ove Edvard Hatlevik, Héctor Hernández Gassó, José Ramón Insa, Adrian McDonagh, Oliver McGarr, Louise Mifsud, Josephine Milton and Anubha Rohatgi). It is a taxonomic model that seeks to encapsulate four key dimensions of equal importance in terms of Digital Competence among teachers. Unlike hierarchical models, which often contain a sequential development framework according to different competence levels (going from basic to the most advanced), the PEAT model aims to highlight a number of dimensions that are equally important in understanding and conceptualizing Digital Competence among teachers (McGarr & McDonagh, 2019).

A competence model for future teachers must obviously include a pedagogical dimension that covers both the unique pedagogical practices that technology can offer in specific thematic areas and broader professional practices that transcend classroom or subject-specific use—for example, communication between home and school or the use of digital technology for managerial and pedagogical purposes. The PEAT model's ethical dimension not only includes the best practices regarding personal ethics but also entails a deeper understanding of issues related to privacy, copy-

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right, critical examination of sources, freedom of expression and the use of digital technology. The attitudinal dimension, meanwhile, involves developing competencies that relate to critical thinking, creative use of digital technologies to support teaching and learning processes, and the ability to adapt new technologies to a professional context, as well as forming a deep understanding of the role of digital technologies in today's society. Finally, the technical dimension refers to the practical skills and competencies needed to use software and hardware in specific situations and also includes an understanding of technological networks and knowledge of how digital devices operate and communicate with each other.

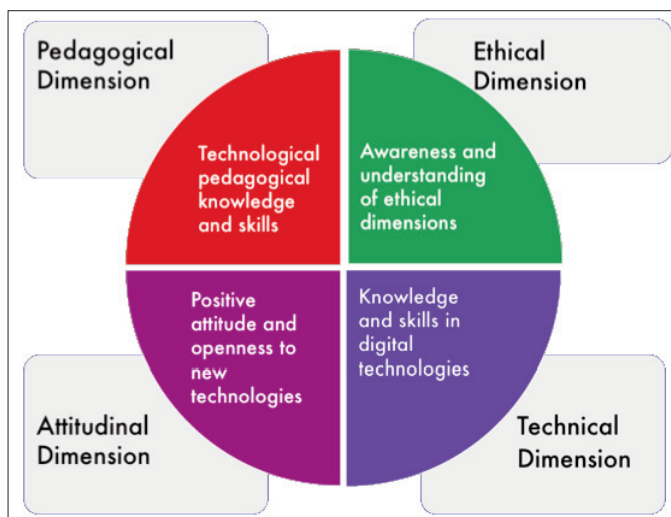


Figure 1. Synthesised model of Teachers' Digital Competence (The PEAT model).

In short, the PEAT model aims to offer an overview of TDC that highlights the dimensions that are most commonly used in many of the models currently in force. Thus, this framework encompasses the necessary technical and pedagogical competencies that one would expect to encounter in teacher training, but it also includes an ethical dimension, which not only covers best practices regarding ICT use but also offers a deeper understanding of the broader ethical issues raised by the use of digital technology.

This special issue seeks to lay the foundations for approaching TDC from this perspective, and the studies selected for it consider these four dimensions based on different approaches to competence.

First, Bård Ketil Engen's article, "Understanding social and cultural aspects of teachers' digital competencies", analyses the importance of being aware of the contextual social and cultural conditions in order to understand the assimilation and implementation of digital technologies in schools. It also reflects on the kind of knowledge and competencies teachers require nowadays. The starting point of the paper is the divergence between the available digital technologies and what is understood as slow acceptance and implementation in schools. Based on the constructivist perspective on the technology's conceptual framework, the article argues that there is a need to look beyond causes and effects to understand how to implement and use these technologies in a vocational educational environment. The study therefore contributes to the discourse surrounding professional teachers' digital competencies.

The second article, "The development of the digital teaching competence from a sociocultural approach", by Pilar Colás-Bravo, Jesús Conde-Jiménez and Salvador Reyes-de-Cózar, proposes to broach the training in Digital Competence among teachers based on a Vygotskian sociocultural perspective that goes beyond the merely technical. To do so, the authors put forward a pedagogical approach that takes this sociocultural component as its starting point by means of four constructs, namely, Command, Preference, Reintegration and Appropriation. Based on these premises, the authors developed a scale to record TDC and drew on a significant sample of 1,881 students in compulsory education from the Autonomous Community of Andalusia (Spain). Their results are structured in accordance with the objectives that they initially put forward and their conclusions contribute to evaluating teachers' ability to develop their students' Digital Competence.

The third paper in this volume, "Teacher's digital competence among final year Pedagogy students in Chile and

Uruguay” by Juan Silva, Mireia Usart and José-Luis Lázaro-Cantabrana, points out the importance of teacher training in the development of Digital Competence, doing so via a comparative study of Chile and Uruguay that demonstrates the basic level of Digital Competence among future teachers, especially in the case of men. The article gives a unique perspective on a region, Latin America, lacking empirical works on this subject. It emphasizes the importance of initial teacher training as key to improving TDC. Finally, the study highlights an obvious concern, namely the scant training given to teachers-in-training in this competence, which can translate into significant problems in how digital technology is handled in the classroom with their future students. This is even more worrying if one takes pedagogical and didactic criteria into account.

The fourth contribution, “Digital resources and didactic methodology in the initial training of History teachers”, by Pedro Miralles-Martínez, Cosme J. Gómez-Carrasco, Víctor B. Arias and Olaia Fontal-Merillas, sets out to ascertain the perceptions of teachers-in-training regarding the resources employed in their classes, which shape their ideas about TDC throughout their educational training. This study groups results from 22 universities, 13 of which are Spanish (344 participants) and 9 of which are English (162 participants) in a single comparative analysis. The paper concludes by highlighting the need for an improvement in teacher training focused on TDC that is not restricted to merely working with technological tools but instead takes advantage of them to intensify aspects such as the comparison of information, academic inquiry and deep and critical learning.

The monographic ends with the article “Competence of future teachers in the digital security area”, by María-Jesús Gallego-Arrufat, Norma Torres-Hernández and Teresa Pessoa. These authors present the results of a questionnaire that was validated by experts and developed with the aim of understanding the predominant competency level and profile in the area of digital security (including knowledge, uses and interactions, and attitudinal patterns) among Early Childhood and Primary Education undergraduate students in Spain and Portugal. Their extensive analysis of the results (there are few works that focus on this particular aspect in the Iberian Peninsula) offers interesting information on the most sensitive aspects and those which require further reinforcement during initial training. The authors set out future lines of research related to improving competencies in the area of digital security.

In short, this special issue is presented as a contribution to the analysis and discussion of both the theoretical and practical aspects related to TDC, its impact on teacher training and the future challenges and difficulties that it presents. To this end, this monographic reflects on the need for technology in future teachers’ initial and ongoing training from different perspectives. Such reflection will surely allow the different models for handling TDC that have been developed in recent years to be considered in more depth and, in addition, it propose specific experiences that could be applied in different educational contexts.

Our world is undergoing rapid transformation owing to digital technologies. In recent years, significant changes have occurred in many areas—both personal and professional ones—and these changes are going to be more profound and come about more rapidly in the near future. This requires new proposals and methodologies for educational models and, especially, for the training of teachers. Therefore, it is essential that the institutions responsible for training teachers implement policies in various areas—in both initial and ongoing training—in order to improve the development of their Digital Competence levels.

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