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Digital skills of regular basic education teachers in the context of COVID-19

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Abstract---Background: Objective of the study: The purpose of this study has been to identify the level of digital skills of regular basic education (EBR) teachers in their pedagogical practice in the context of covid 19 through the review of the available literature disseminated among teachers. years 2016 and 2021. Method: The PRISMA methodology has been used; Searches were made in the Scopus database using keywords related to the research topic. Of the 299 investigations identified through the search, 16 were selected that coincided with the inclusion criteria, all of them were research articles, carrying out the compilation and systematic review of the studies referring to digital competences in EBR teachers. Results: The results showed that EBR teachers show a low level of digital competence due to several factors, including a low inclusion in this field since their professional training.

Keywords---digital competence, COVID-19, professional training.

Introduction

The incorporation and use of information and communication technology (ICT) tools and resources in the pedagogical practice of teachers has been approached as an important element in teaching for many years ¹ ; however, it was not until the occurrence of the pandemic caused by covid 19 that it became an imperative need for teachers, this situation meaning easy handling of these tools for a certain number of teachers that represented immense difficulties for many others. , this due to their limited expertise and incorporation in their pedagogical practice and especially weak since their training; lacking many of previous experiences to incorporate them in their pedagogical activities ² . Likewise, the majority of teachers do not have the specific knowledge necessary to use the most common technologies in the classroom ³ . Therefore, the initial challenge that teachers faced to implement remote work and provide the non-face-to-face service to students consisted of putting in their best effort to appropriate some ICT-related tools ; however, the main difficulty they had to face was managing digital skills to properly carry out their educational work in the context of remote work ³ . A significant number of teachers do not have the basic skills to design, facilitate and supervise distance learning activities, especially teachers from educational institutions in rural areas, remote work and digitization are additional challenges, as well as their low command and preparation in handling ICT ⁴ .

There is an urgent need for teachers to appropriate and develop digital competence to implement it in their teaching-learning process ⁵ . Digital competence in teachers is key in their performance and in the development of their profession. In this perspective, it is imperative and urgently necessary for teachers to appropriate digital skills that allow them to use ICT appropriately and incorporate them into their teaching activities ⁶ .

In Latin America and the Caribbean, teachers, in relation to digital skills, show the existence of very uneven levels in the percentage of teachers trained to use ICT, also finding, to a large extent, disparity in the percentage of teachers who include in their pedagogical practice the use of ICT ⁷ . In Peru, in terms of educational policies implemented by the different governments since the 1990s, the ICT integration trend has been based, basically, on equipping educational institutions with technology; that is, with equipment such as computers, multimedia projectors, etc.; however, they did not consider or take teachers into account in the policies implemented in terms of training in the use of ICTs, excluding them and underestimating their important role as facilitators and companions of student learning in the use of available technologies. ⁸ . A situation of abandonment by the State is evidenced by not being interested in teachers appropriating digital competence, demanding that they find a way to deal with the pandemic and carry out remote work and development of their work to the extent of their possibilities, through the use of some basic communication technology tools such as WhatsApp or other means to serve students.

Method

The review followed a line of descriptive, documentary and systematic review basic research. These reviews make it possible to search for useful evidence based on research carried out on a specific topic, considering the time constraints, the analysis of the information collected and the obtaining of results⁹. The research variable was "teaching digital competence", the relevant studies on the subject were identified, the information was searched in Scopus that included a period of 5 years, between the years 2016-2021. The main terms for the search were "digital competence" and digital competence in education", in English and Spanish, allowing the identification of 299 publications related to the research topic, only 16 studies were selected under exclusion criteria: research articles referring to competence information of basic education teachers, studies that have a clearly specified methodological design, inclusion of keywords in the title or abstract, and published articles. Regarding the exclusion criteria, they referred to those publications that were not related to the variable or to the objective of the study. Likewise, the recommendations for systematic reviews and the PRISMA statement were considered, performing the search for the systematic review in four stages: identification, screening, eligibility and inclusion.

Figure 1: Characterization of the articles included in the review

No.	Author/Year	Magazine	Country	Design of the investigation	Main findings
10	Pérez-Escoda, A., Iglesias-Rodríguez, A. and Sánchez-Gómez, MC (2016)	ACM International Conference Proceedings Series pp.631-636	Spain	quantitative	Teachers lack digital skills, meaning that teachers are not capable of making a pedagogical use of ICT, in this sense, it is convenient to reconsider the integration of ICT from teacher training.
11	Falco, JM (2017).	Electronic Journal of Educational Research , 19(4), 73-83.	Spain	quantitative	Teachers show an intermediate level of performance for personal use (information search and use of common tools) and a low level of didactic achievement.
12	Rossi, AS and Barajas, M. (2018)	Faculty. Journal of Curriculum and teacher training 22(3), 317-339	Spain	Qualitative	Teachers show a complex process of acquiring digital competence, linked to information management, the didactic use of ICT, the evaluation of digitally mediated activities and collaboration in virtual environments.
13	Lores-Gómez, BL, Thevenet, P. and García-Bellido, MR (2019)	Faculty. Curriculum magazine and faculty formation 23 (4), pp.234, 260	Spain	mixed	The results show a training deficit in the digital competence of teachers as a result of a purely instrumental and theoretical training offer on ICT.
14	Fuentes, A., López, J. and Pozo, S. (2019)	REICE. Ibero-American Journal on Quality, Effectiveness and Change in	Spain	Quantitative	Teachers show continuous training, taking two to three courses per year related to ICT. In the same way, they show skills in certain areas of digital teaching competence and a deficit in

		Education			the creation of digital content.
fifteen	Hinojo-Lucena, FJ, Aznar-Díaz, I., Cáceres-Reche, MP, Trujillo-Torres, JM and Romero-Rodríguez, JM (2019)	IEEE Access 7, 8920067, pgs. 178744-178752	Spain	quantitative	The results show a low digital competence of the teaching staff, demonstrating how some factors such as age, type of IE, previous training in ICT, qualifications, experience and professional category affect the development of digital competence.
16	Ruiz, M. (2020)	Interuniversity Journal of Research in Educational Technology (RIITE)	Spain	Quantitative	Limited use of technology in classrooms, characterized by being multilevel, due to lack of training in digital skills.
17	Sánchez-Prieto, J., Trujillo-Torres, JM, Gómez-García, M., Gómez-García, G. (2021)	Journal of Research in Health, Psychology and Education 11 (3), pgs. 758-769	Spain	Quantitative	The results show an insufficient level of teaching digital competence, finding some factors that influence the different components of digital competence such as the previous training of teachers, the locality in which their IE resides or the specialty to which it belongs.
18	Dias-Trindade, S., Moreira, JA., Ferreira, AG (2021)	Acta Scientiarum - Technology 43, e56383	Portugal	Quantitative	Teachers show a moderate level of digital competence. From a landscape observed before the start of the covid-19 pandemic, it is possible to understand their needs in terms of work involving digital technologies.
1	Pérez-Calderón, E., Prieto-Ballester, JM and Barrado, M. (2021)	Int. J. Environ. Res. Public Health 18 (15), 8093	Spain	quantitative	Teachers showed a medium-high level of knowledge and use of ICT. In addition, it was found that digital competence is conditioned by factors such as age, experience, gender, and level of education.
19	Garzón-Artacho, E., Sola-Martínez, T., Romero-Rodríguez, J.-M. and Gómez-García, G. (2021)	heliyon 7 (7), e07513	Spain	quantitative	The level shown by the teachers is low, especially in terms of creation, information literacy and problem solving, although they showed optimal skills in communication and collaboration of digital content. The findings also determined the importance of factors such as age, teacher training and the type of EI to continue developing this type of skills.
twenty	Domínguez-Lloria, S. and Pino-Juste, M. (2021)	README Electronic Magazine (47), p. 80-97	Spain	quantitative	Music teachers have low digital competence both in knowledge and in the use of digital tools.
twenty-one	Rodríguez - Muñiz, LJ, Burón, D.,	Educational Sciences 11 (5), 228	Spain	Quantitative	Secondary mathematics teachers reflected an adequate digital competence for the teaching of

	Aguilar-González, A. and Muñiz-Rodríguez, L. (2021)				mathematics. Significant differences were observed according to gender and age regarding the perception of teachers about their adaptation to emergency remote work.
2 2	Holguin-Alvarez, J., Apaza-Quispe, J., Ruiz Salazar, J.M., Picoy-Gonzales, J.A. (2021)	Venezuelan Journal of Management 26 (94), pp.623-643	Venezuela	quantitative	Differences were found in the average and difference indices analyzed, these supported the increase in the levels of digital competence in teachers, unlike the directors of educational institutions located in vulnerable contexts, higher levels and averages were found in acquisition skills and use of information, communication and collaboration, and in the creation of digital resources.
	Sánchez-Prieto, J., Trujillo-Torres, JM, Gómez-García, M. and Gomez-Garcia, G. (2021)	Research Health Psychol. Education (2021)	Spain	quantitative	The results show an insufficient level of digital competences, finding some factors that influence the various components of digital competence, such as teacher training, the locality in which their IE resides and the specialty to which it belongs.
24	Moreno-Guerrero, AJ, Rodríguez, AM, Ramos Navas-Parejo, M. and Rodríguez, C. (2021)	Sources Magazine	Spain	quantitative	The results show that augmented reality is a resource that has been used by teachers who teach science, presenting these with a medium level of digital competence.

Results

From the review of the sample collected, it can be seen that the scientific production in this field has been gaining more interest and relevance in recent years, noting that the bulk of the research was published between 2018 and 2021. Training in digital skills of EBR teachers in service is almost nil, as revealed by published studies, and they basically use ICTs for activities of personal use, many of them related to their curricular planning. Generally, the articles point to the need to incorporate ICT in the classroom, highlighting that teachers need to be trained in digital skills.

Among the 16 studies selected from the last six years, it can be observed according to the similarity of the investigations and the results that, in eight of them, teachers show an insufficient or low level of digital competence, highlighting that, among The factors that affect or affect this situation are age, type and place of location of the EI, lack of previous training in ICT, experience and the specialty of the teacher. On the other hand, two studies indicate that teachers lack digital skills due to not having been provided with training in digital competence and six studies place them at an intermediate level of performance.

Conclusions

With almost a quarter of the 21st century having passed and practically living in a digital age, it is necessary for educational systems and educators to introduce substantive changes and rethink their teaching methods, adjusting them to the digital age. It is concluded that EBR teachers are not empowered in digital competence and, in this sense, they are not capable of updating their teaching strategies to the demands of today. The objective of the study is fulfilled: the level of competence of the EBR teacher based on a systematic review of the available scientific literature.

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