

A REVIEW OF STUDIES ON DIGITAL COMPETENCE IN TEACHING ENGLISH AS A FOREIGN LANGUAGE

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Abstract: This review aims to highlight how digital competence and English as a foreign language were addressed in research and how the integration of digital tools in the teaching and learning process was reflected in the pertinent research area. For that purpose, it examines the studies published in notable journals between 2017 and 2022. Criteria-based review approach was used to search the relevant articles. Following this approach, review of 24 articles was categorized under five main themes; a) article distribution into years, and according to the contexts, b) target groups as participants in the studies, c) focal points of the relevant research, d) methodological tendencies in the studies and e) implications drawn from studies. As a result of the analysis of the papers, the review suggests that digital competence needs being inspected from different perspectives relating it to psychological constraints. Further, longitudinal studies and action research can yield more fruitful results to understand the dimensions of teacher digital competence.

Keywords: Criteria-based review approach, digital competence, EFL, language teaching, teachers

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Introduction¹

As technology has significant impacts on all walks of life, so does it on education. It evolves day by day, and teachers are supposed to integrate cutting-edge tools into their teaching practice to keep up with the digital era.

Digital competence has been approached from different aspects as a notion so far. To this end, some concepts have been put forward as “media literacy, digital literacy, technology literacy, ICT skills, information literacy, digital competence” to refer to the ability of a person to use computer and technology when reviewing the literature (Ala-Mutka, 2011; Engen et al., 2014; Ilomäki, Paavola, Lakkala & Kantosalo, 2016; Iskandar, Sumarni, Dewanti & Asnur, 2022). However, it appears that there is a consensus on referring to the skills related to technology as ‘digital competence’ in the literature. This term will be used in the review, aligning with its common usage. It was observed that digital competence originally emerged in papers and documents as a notion pertaining to policy, as well as in more contemporary policy papers (Ilomäki et al., 2016). Some of the researchers asserted that it was hard to define the concept of *digital competence* as it was closely linked with an issue that was evolving in its nature: technology (Ala-Mutka, 2011; Chabert, 2021; Ilomäki et al., 2016). Digital competence was recognized by the European Union as one of the eight important competences for lifelong learning with the 2006 European Recommendation on Key Competences. The use of ICT to accomplish objectives relating to employment, employability, learning, leisure, inclusion, and/or involvement in society could be broadly characterized as digital competence (Ferrari, 2012). In a similar vein, Redecker (2017, p. 90) makes a definition as follows: “The confident, critical, and creative use of ICT to accomplish objectives relating to employment, employability, learning, leisure, inclusion, and/or participation in society is referred to as digital competence”.

Digital competence is a novel concept which is composed of a diversity of abilities and knowledge and is made up of several disciplines ranging from media and communication, technology and computing, to literacy and information science. It pertains to political goals that aim to be compatible with technological developments on the part of citizens (Ilomäki, Kantosola & Lakkala, 2011).

Society is increasingly becoming digital as technology advances. As noted earlier, the concepts related to digital competence first appeared in policy-related papers. Intending to raise more digitally competent or literate citizens, The European Union attempted to present several frameworks, including various competencies related to lifelong learning (Lee, Thayer & Madyun, 2008). In

1. Acknowledgements: The authors would like to express their gratitude for Sakarya University’s library services as the access to a wide range of scholarly resources and databases was instrumental in conducting a thorough and comprehensive review of the literature.

one of the most pioneering frameworks, Ferrari (2012) laid an emphasis on the necessity of classifying the competence levels according to age of target groups, the breadth or depth of the application-related material, and the level of cognitive complexity. For this purpose, she divided the definition of digital competence into multiple constituent parts as follows:

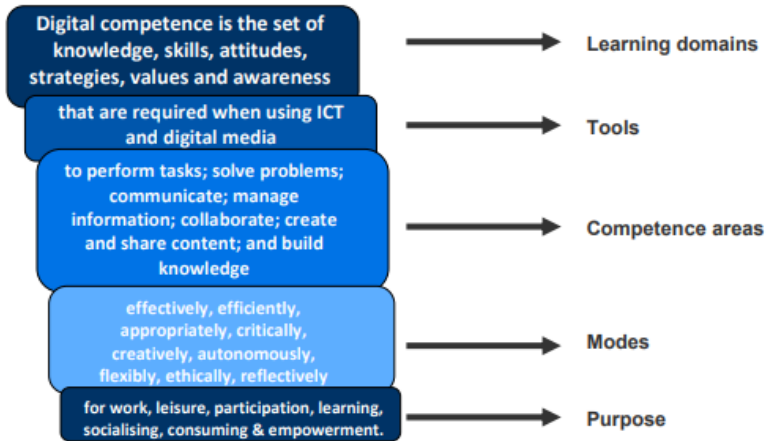


Figure 1. Parts of the definition of digital competence (Ferrari, 2012, p. 30)

Later on, Redecker (2017) presented a framework, especially for teachers in association with the European Union. DigCompEdu framework offers enlightening guidelines for educators to follow in order to guide policy throughout the European context. With a total of 22 competencies, the DigCompEdu framework separates educators' digital competency into six distinct domains (see Figure 2).

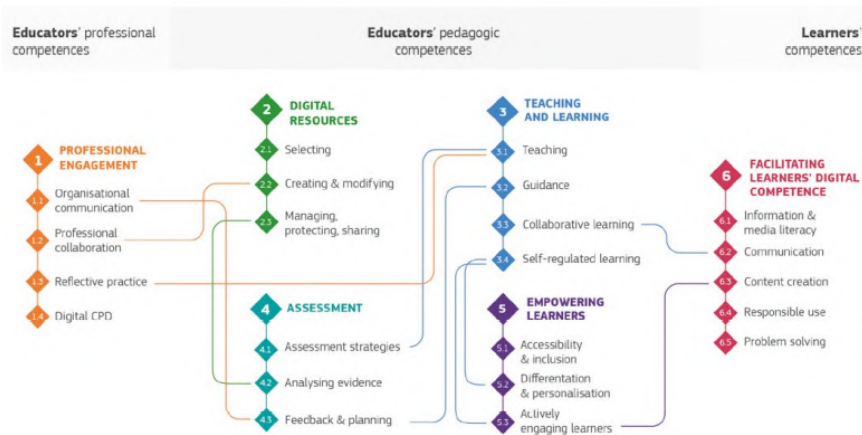


Figure 2. DigCompEdu Competences and Their Connections (Redecker, 2017, p.16)

According to this framework, a teacher's digital competence is identified by areas 2-5 as these areas not only demonstrate his or her digital pedagogic competence, but they also help them realize to what extent they require to stimulate efficient, innovative teaching and learning strategies.

As noted earlier, teachers must keep up with the most recent developments in technology and education in order to maintain their professional development. As they serve as mentors for the younger generation as well as educators of the students, Redecker (2017) emphasizes the significance of teachers having digital competence. Over the past 20 years, a great deal of research has been conducted on the subject. Most of these studies have used the DigCompEdu framework, which offers educators a clear overview, as a research tool or as a guide (Al Khateeb, 2017; Benali, Kaddouri & Azzimani, 2018; Chabert, 2021; Del-Moral-Pérez, Villalustre-Martínez & Neira-Piñeiro, 2019; Maiier & Koval, 2021; Smagulova, Sarzhanova & Tleuzhanova, 2021; Solomakha & Kosharna, 2020; Wong & Moorhouse, 2021). The literature is not only composed of empirical and theoretical research on digital competence, but a vast number of review studies are also evident (Basilotta-Gómez-Pablos, Matarranz, Casado-Aranda & Otto, 2022; Hidalgo, Parra & Abril, 2020; Røkenes & Krumsvik, 2014). The current study addresses the target groups in the studies, the distribution of articles according to their contexts and year of publishing. Along with that it also examines the implications drawn from those studies and the factors mentioned above which have been the focus of previous research.

This review aims to present how digital competence and English as a foreign language were addressed in research and how the integration of digital tools in the teaching and learning process was reflected in the pertinent research area. For that purpose, the following research questions are listed:

RQ1. What is the article distribution relating to digital competence and language teaching

a) by years?

b) according to contexts?

RQ2. In which demographic was the research conducted?

RQ3. Which research methodologies were used in the studies?

RQ4. What are the emerging key themes regarding digital competence in the reviewed studies?

RQ5. What are the implications drawn from the relevant studies

Methodology

The primary objective of this study was to review the existing digital competence study respecting the research distribution by years and based on their contexts, the target groups in the research, focused research topics, research methodology, and implications drawn from the relevant research. To this end, a criteria-based review approach, which was defined as a research approach underlining the most appropriate codes in the scope of the research questions (Aufschnaiter & Rogge, 2012) was employed.

Inclusion and Exclusion Criteria

The criteria for selecting the articles can be listed as follows in Figure 3:

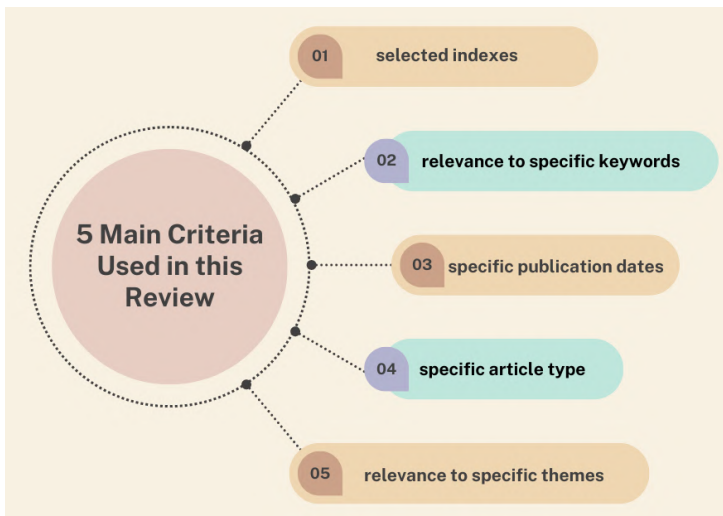


Figure 3. Criteria used in search of articles in this study

The following procedure was used to determine the studies to be examined. To reach the eligible journals, the database of VETIS was utilized. Initially, the search was limited to Eric, SSCI, DOAJ, and Science Direct journals by clicking on the index. For the second criteria, “digital competence”, “language” and “teachers” were used as keywords to find relevant papers. Thirdly, to find out more recent studies, the publication date was limited between 2017 and 2022. Fourthly, only research papers were included in the review. As a consequence of the initial search, 36 articles were found related to digital competence and language teaching. However, as the digital competence in English language study was of major interest in this review, research studies and only the ones focusing on the English language and ICT in education were included in this study. Therefore, irrelevant themes covered in the papers were excluded, and 24 articles made up of the scope of this review.

The list of the names of the journals which published the articles in the study was shown in detail in Appendix A.

Data Analysis

A grounded method was used for the analysis and synthesis of the selected studies. Grounded theory can be best characterized as a research technique aimed at deriving theory from data (Punch, 1998, p. 163, as cited in Khan, 2014) and this review followed open coding, axial coding and selective coding respectively (Williams & Moser, 2019). Each study’s pertinent topic, methodology, and conclusions were taken out and given respective codes in open coding. In axial coding, similar themes and categories were identified. As for the final step of analysis, namely selective coding, the themes elicited through axial coding were refined to form a theme.

Findings and Discussion

Article Distribution: Yearly Trends

The articles which were reviewed in this study were published between 2017 and 2022 as noted earlier. The databases were also restricted to four, namely DOAJ, SSCI, Eric, and ScienceDirect; as a result, the scope of this review included twenty-four articles. The same number of articles was published in 2017 and 2018, and in 2021 and 2022 with the number of 1 and 7 respectively. As for the other publications, 3 out of 24 articles (12,5% per year) were published in 2019, and 5 out of 24 articles (18,5%) were published in 2020.

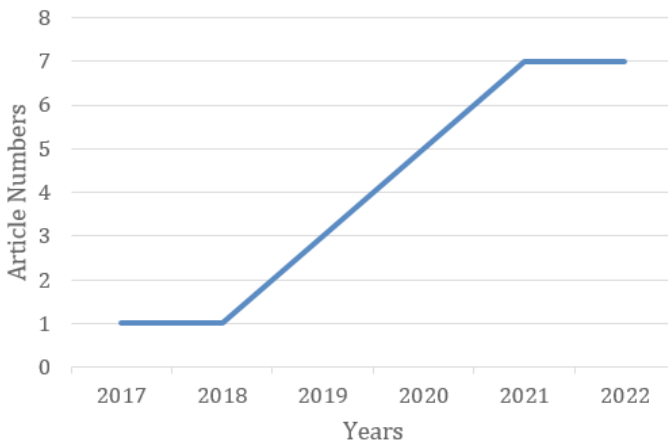


Chart 1. Article distribution into years

Chart 1 above demonstrates the number of studies according to the years. It can be implied from this data that much research was not conducted in 2017 as integrating digital technologies into teaching might be in its crawling period. Digital competence and the integration of technology into classes appeared to have garnered much attention from researchers in recent years, especially after 2019. In this regard, some authors pinpointed the influence of the development of the European Framework for Digital Competence and the outbreak of COVID-19 as a milestone of the research trend on digital competence. There were controversial views concerning this. The amount of research on the digital competence of university teachers increased in the years 2012, 2014, and 2017, however 2017 was the year in which the majority of the research was carried out because the most fundamental TDC document - the European Framework for Teachers Digital Competence, was published in that year by Redecker (Basilotta-Gómez-Pablos, Matarranz, Casado-Aranda & Otto, 2022). To Kassymova, Tulepova and Bekturova (2023), the publication of DIGCOMP by the European Union in 2013 marked the beginning of the first discussions on the concept of digital competence, and this theme has gained much interest since then. On the other hand, Yılmaz-Ergül and Taşar (2022) assert that digital competence has garnered much attention since the beginning of 2020 with the outbreak of COVID-19 in the whole world. Nonetheless, the scope of this review was restricted to much recent years, a considerable amount of research highlighted that the COVID-19 outbreak caused a significant shift from traditional to online teaching (Fauzi, 2021; Meirovitz, Russak & Zur 2022; Nugrohoa, Trianab & Zulaiha, 2022; Scanni, 2022; Tomczyk et al., 2021; Wong & Moorhouse, 2021). That's why the integration of technology in teaching and learning process, and digital competence seem to appeal to the interests of researchers during and after the pandemic. Additionally, COVID-19 outbreak was regarded as a call for training in-service or pre-service teachers according to the demands of current digital era and for being equipped with the requisite knowledge to keep up with the tech-savvy learners (Meirovitz, Russak & Zur, 2022; Nugrohoa, Trianab & Zulaiha, 2022; Wong & Moorhouse, 2021)

Article Distribution: Contextual Trends

When reviewing the literature, it was noticed that the majority of the studies was conducted in Spain and Indonesia, based on the research articles obtained for this study. The distribution of the articles in relation to the settings in which they were conducted is shown in Chart 2 below:

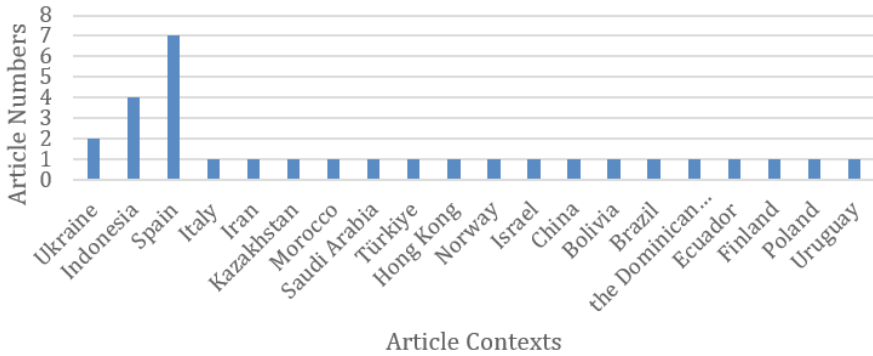


Chart 2. Article distribution according to the contexts

Considering the relation between context and the foci of the studies regarding the Spanish context, the foci of the studies could be categorized as in the following. Forty-two percent of the studies (3 out of 7) was conducted to scrutinize how effectively teacher training programs prepare pre-service teachers to implement digital tools into their future teaching practices (Guillén-Gámez, Lugones & Mayorga-Fernández, 2019; Kopinska, 2020; Rahimi & Tafazoli, 2022), whereas forty-two percent of them (3 out of 7) was carried out to examine teachers' perceptions and practices (Chabert, 2021; Del-Moral-Pérez et al., 2019). The rest was looking for a link between students' foreign language development and the incorporation of digital genres into the teaching process (Pascual, 2019).

Taking the number of studies based on their settings into account, Indonesia followed Spain in terms of the core of the research, which aimed to inspect digital competence. It was apparent that perceptions and practices of teachers were of major interest to the research in the Indonesian context. In this regard, two out of four research were in an attempt to reveal the digital competence of teachers (Laeli, Setiawan & Anam, 2020; Nugrohoa, Trianab & Zulaiha, 2022). One of them sought the relation among autonomy level, writing performance, and digital competence of EFL learners (Andina, Cahyono & Widiati, 2020), while the other focused on finding out the impacts of online learning during COVID-19 pandemic on both teachers and learners (Fauzi, 2021).

In Ukrainian context, there were two studies conducted and both of them concentrated on pre-service readiness to utilize digital tools in their teaching practice (Maiier & Koval, 2021; Solomakha & Kosharna, 2020).

Tomczyk et al. (2021) conducted a cross-cultural study to measure perceptions of teachers about the key components of new digital tools from various countries working in Europe, Latin America, the Caribbean regarding the use of the aforementioned tools in learning and teaching process. Teachers from Bolivia, Brazil, the Dominican Republic, Ecuador, Finland, Poland, Türkiye, and Uruguay were involved in this study.

There was no further research conducted in the same setting; however, surprisingly, there was only one study carried out in Italy, and it was acclaimed as the first study on distance education during the pandemic period (Scanni, 2022). While Italy was among the countries most affected by the lockdown (Natilli et al., 2022), research regarding digital competence and the constraints teachers and learners encountered during online teaching was limited.

Population of Interest: Inclusion in the Studies

When the population of interest included in the studies was reviewed, it was observed that the target groups in the studies were listed as *in-service teachers*, *pre-service teachers*, *language learners*, and *both learners and teachers* in general. The number of the studies according to the population of interest is illustrated in a table below:

Table 1. Population of Interest

Population of Interest	n	%
In-service teachers	10	41,66%
Pre-service teachers	7	29,16%
Language learners	5	20,83%
Both language learners and teachers	2	8,33%

When closely examining research articles, the primary themes in the studies typically revolved around the attitudes, knowledge, and practices of EFL teachers. These themes were followed by discussions on the constraints of using digital tools in education, digital awareness, digital competence, and self-efficacy. Thirty percent of the studies including teachers as participants concentrated on examining experiences of English language teachers during remote teaching (Laeli et al., 2020; Meirovitz et al., 2022; Tomczyk et al., 2021; Wong & Moorhouse, 2021). Twenty percent of the studies focused on the obstacles teachers encountered during distance education (Chabert, 2021; Scanni, 2022). The key themes of the rest of the studies were based on digital competence of teachers and their readiness of implementing digital tools into teaching (Al Khateeb, 2017), the relation of digital competence of teachers to self-efficacy and their years of teaching experience (Benali et al., 2017).

A considerable amount of the relevant studies recruited pre-service teachers as participants, and they dealt with the readiness of future teachers about teaching English digitally competent enough in general (Smagulova, 2019; Solomakha & Kosharna, 2020). Examining perceptions, attitudes and motivation of pre-service teachers was a popular theme in the relevant papers, as well. Gudmundsdottir et al. (2020) examined student teachers' perceptions of privacy, cyberbullying and evaluation of the digital content in line with their professional digital competence. Maiier and Koval (2021) investigated pre-service teachers' willingness to use

digital resources for foreign language instruction, as well as their views toward developing their digital competence and the methods for doing so. In another study, the integration of digital tools in education by pre-service teachers was investigated to determine whether the factors such as age, gender, motivation had an impact on their use (Guillén-Gámez et al., 2019). Çebi and Reisoğlu (2022) intended to shed light on the connections between the metaphors pre-service teachers developed for a technology-savvy teacher and the motivations behind them, as well as to make it easier to come up with meaningful metaphors in the study they carried out in a Turkish context. Belda-Medina and Calvo-Ferrer (2022) aimed to evaluate pre-service teachers' attitudes and digital competence in order to integrate augmented reality (AR) into the teaching of foreign languages.

On the other hand, few studies looked into the factors influencing digital competence of language learners. The effectiveness of implementing digital genres into EFL learning was investigated in an experimental study (Pascual, 2019). In a similar study by Andina et al. (2020), it was concluded that as the level of learner autonomy increased, so did the writing performance. It was assumed that the learners who made use of technology in their writing were likely to accomplish greater writing performance. The relationship between their digital competence and approaches to learning was examined in order to provide insights about learners by evaluating language learners' academic scores (Niu et al., 2022).

Research including both teachers and learners as participants was relatively rare, there were only two studies when reviewing the studies on digital competence and language teaching. One of the studies gauged the perceptions of teachers about digital storytelling, and its impact on digital competence of learners (Del-Moral-Pérez et al., 2019). The other study by Fauzi (2021) aimed to determine the relationship among students' learning outcomes and their perceptions, knowledge, attitudes, and motivations when learning English utilizing an online learning system based on WhatsApp during the Covid-19 pandemic.

Methodological Tendencies

Upon examining 24 articles to determine the prevailing research methodology in digital competence studies, it was found that quantitative studies outnumbered other research methodologies, comprising 12 papers. Eight of the studies used a qualitative approach, whereas the remaining 4 studies had a mixed-method research design. It could be inferred from this result that there was a tendency to utilize quantitative and qualitative research methodologies rather than mixed-method research.

Regarding research designs, correlational study, descriptive quantitative method, and non-experimental method designs were utilized most in

quantitative studies. Grounded theory, case study and narrative inquiry designs were utilized in qualitative studies. In the studies adopting a mixed-method approach, experimental designs were used mostly.

As for the data collection, surveys and questionnaires were mostly employed in quantitative studies and students' scores, students' GPAs, and checklists made up the other data collection tools in these studies, while open and close-ended surveys, interviews, observations, document analysis, and students' scores were used as data tools in qualitative studies. Surveys, open and close-ended questionnaires, practical observations, pre-tests and post-tests, and group discussions were utilized as data collection tools in the mixed-method studies.

An illustration for methodological tendencies is shown below (see Figure 4).

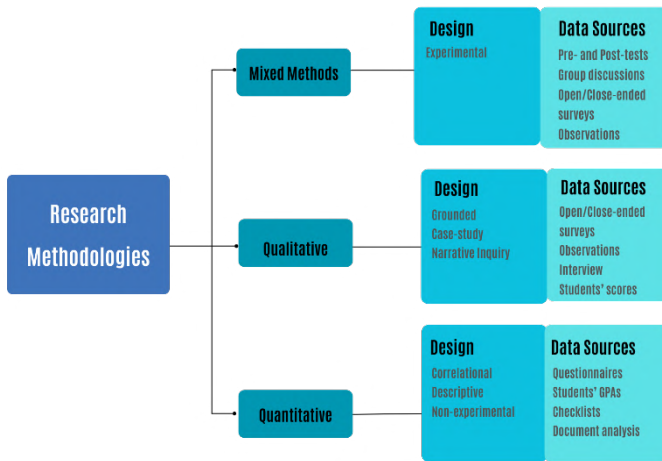


Figure 4. Research Methodology Illustration

Key Themes of the Reviewed Studies

The findings of the analysis pointed to six main themes in this regard:

- the importance and impact of digital competence,
- teachers' approach and perceptions of digital technology,
- digital competence and language learning performance of learners,
- teacher education and digital competence development,
- the role and future of digital technology in education, and
- digital inequality and digital divide.

A graph to demonstrate the statistical distribution of the articles into key themes is shown below (see Chart 3), and then the key themes are discussed in detail.

Key Themes

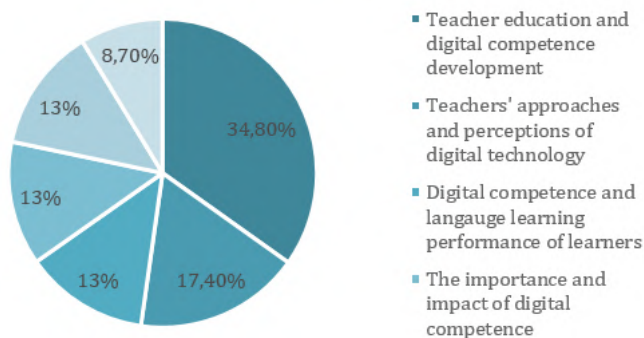


Chart 3. Statistical distribution of key themes into articles

Belda-Medina and Calvo-Ferrer (2022), Wong and Moorhouse (2021), and Scanni (2022) highlighted the importance of teachers' and learners' digital competences in educational processes and noted that teachers' confidence levels increased as they gained more experience with digital tools. They also emphasized the need of teachers' digital competences being enhanced, particularly for emerging crises, and the significance of positive attitudes and high digital competences in language education. All of this research demonstrates the need for teachers to become more digitally competent in order to improve the effectiveness and efficiency of educational processes.

In their investigations of teachers' approaches and perceptions toward digital technology, Meirovitz et al. (2022), Nugrohoa et al. (2022), Çebi and Reisoğlu (2022), and Maiier and Koval (2020) collectively highlighted the crucial role of these factors in the ongoing digital transformation within education. They stressed the importance of developing teachers' digital competences and ensuring the effective utilization of educational technologies.

On the other hand, the significance of digital competence was not only linked with teachers' effective educational processes; students were also added to the equation in the reviewed studies. Kopinska (2020), Niu et al. (2022), and Solomakha and Kosharna (2020) reported how the level of digital competence influenced language learners in terms of the learners' psychological wellbeings and language learning performance.

Naturally, in-service and pre-service teachers were the subject of the calls for digital competence development. Meirovitz et al. (2022), Nugrohoa et al. (2022), Solomakha and Kosharna (2020), Al Khateeb (2017), Gudmundsdottir et al. (2020), Rahimi and Tafazoli (2022), and Wong and Moorhouse (2021) addressed the need for optimizing teacher education programs in terms of digital competence development and ensuring teachers' integration of digital

tools into their teaching. Thus, a support mechanism was recommended for the development of teachers and the enrichment of the language education process.

Discussing the role and future of digital technology in education, Tomczyk et al. (2021) suggested the positive impact of digital technologies on increasing student achievement by providing interactive learning opportunities, fostering independent and authentic learning, and making the learning process more effective and enjoyable. Smagulova et al. (2021), on the other hand, discussed the evolving role of digital technologies in future education systems, which would provide customized learning processes, flexible and diversified learning experiences, and data-based decision-making. It was at this point that the digital inequality and digital divide theme came to the fore. The studies by Chabert (2021) and Simões (2021) excavated this issue by pointing out insufficient infrastructure, limited internet access, and the absence of appropriate devices that contributed to students disengaging from education and widening the digital divide. The impact of residence context was also reported to exacerbate the inequality and divide among educators.

Implications from the Studies: Practical and Theoretical Considerations

As far as the relevant studies on digital competence and English language teaching were reviewed, the researchers appeared to suggest pedagogical implications mostly in addition to research-oriented implications. Most of the authors suggested that teachers should be trained according to the demands of the current era, and there was a call for revising teacher training programs accordingly. While training student-teachers, underpinning the importance of ICT was crucial to improve their professional digital competence (Gudmundsdottir et al., 2020). Further, they suggested not only integrating ICT into teacher training programs but they also proposed providing student-teachers with ample opportunities of seminars, courses and activities. Apart from the pedagogical implications suggested, they addressed the gap in investigating the responsible use of ICT and how it emerged in different contexts of different teacher education programs. Khateeb (2017) proposed that along with providing instructors and teacher educators with access to various technology tools, the relevant departments should also provide learners with enough training, knowledge, and skills. Regarding keeping up with the latest technological developments in education, Nugrohoa et al. (2022) also informed the stakeholders about the necessity to equip teachers of the twenty-first century with requisite knowledge and skills of technology integration in teaching practice. Similarly, Solomakha and Kosharna (2020) suggested that the use of digital technologies in education would satisfy the needs of the child of the twenty-first century, so

university programs that prepare students for pedagogical specialties must be updated. Digital tools must be used extensively throughout the learning process in order to increase students' communicative ability in a foreign language and their willingness to employ them in future pedagogical activities.

Several papers suggested that the challenges encountered during online and remote teaching should be taken into account. In this respect, Wong and Moorhouse (2021) put forward that teacher training programs and additional training should be offered to the teachers so as to improve their digital competence based on the challenges and constraints they encountered during remote teaching during Covid-19. Some of them proposed that future research was required. Regarding this, Scanni (2022) suggested that future research on distance education and COVID-19 could utilize these findings to assess methodologies and approaches employed in different countries. This could enhance our understanding of the context surrounding the progress of distance education during and after the pandemic. Meirovitz et al. (2022) also stated that further research was needed as the technology itself was an ever-growing area constantly, as a result, they suggested that it would be crucial to identify constraints and opportunities arisen in online education. Chabert (2021) addressed the problems that arose during online teaching as a call for an up-to-date integration of technology.

With respect to further research, Tomczyk et al. (2021) pose the following questions in their study to be investigated in future research: what is the backdrop of the differences among countries, is it related to their cultural differences or the availability of the technological facilities? Laeli et al. (2020) asserted that the examples of instruction for the literacy of finding and critically evaluating information had to be addressed in future studies. Conducting a study in Kyiv, Maiier and Koval (2021) suggested that novel research needed conducting in different contexts to gain insights into the professional development of pre-service teachers.

Conclusion and future directions

In the current study, 24 publications on digital competence and English language education that were published in reputable journals between 2017 and 2022 were examined in order to determine how the articles were distributed by years and contexts, their focal points, research methodologies, and implications. As a consequence of the current review, these implications are suggested:

- Highlighting the Significance of Teacher Training

Numerous authors (Al Khateeb, 2017; Gudmondottir et al., 2020; Meirovitz et al., 2022; Rahimi & Tafazolli, 2022; Wong & Moorhouse, 2021) expressed similar views on the importance of enhancing the digital skills of teachers and providing them with ample opportunities through both pre-service and in-

service training programs. Based on their findings, these authors concluded that current teacher training programs did not effectively support future teachers in improving their digital competence and keeping pace with the ongoing technological advances in education.

- Exploring Multidimensional Aspects of Digital Competence

To begin with, the relevant studies examined the digital competence from one aspect generally, that is to say, the digital competence level of teachers and learners tended to be investigated through tools rather than relating it to other factors which may have a significant impact on their digital competence or actual classroom practices. There were few studies comparing competence levels and actual practices. In addition, this issue was generally examined from only one perspective, as digital competence; however, it needs being inspected from different perspectives relating it to other possible factors contributing to or inhibiting development of digital competence. For instance, the degree to which the level of teachers' autonomy and their efficacy determine their digital competence can be investigated to gain a deeper insight. In this regard, psychological constraints can be included in further research.

- Broadening the Sampling Frame

Moreover, the participants tended to be teachers, and there were fewer studies including both learners and teachers as participants. Conducting empirical studies with both groups as control and experimental groups could provide a fruitful insight into education so that the challenges and advances of integration of digital tools into learning process could be detected. Further, digital competence of teacher educators can be investigated in order to gain a better understanding about teachers.

- Expanding Research methodology tendencies

Benali et al. (2018) suggested that that DigCompEdu CheckIn tool could be utilized to investigate the current needs of teacher training professionally. Additionally, longitudinal studies were more likely to highlight thorough results about the learning process; however, they were rarely found when reviewing the literature. Although employing a longitudinal study is harder, it is better in terms of providing comprehensive outcomes.

As some of the relevant studies suggested (Gudmundsdottir et al., 2020; Maiier & Koval, 2021), cross cultural studies can be conducted. Examining different groups from different contexts could give an understanding about professional development of teaching.

References

- Al Khateeb, A. A. M. (2017). Measuring digital competence and ICT literacy: An exploratory study of in-service english language teachers in the context of Saudi Arabia. *International Education Studies*, 10(12). <https://doi.org/10.5539/ies.v10n12p38>
- Ala-Mutka, K. (2011). Mapping digital competence: Towards a conceptual understanding. *Luxembourg: Publications Office of the European Union*.
- Andina D. M., Cahyono B. Y., & Widiati, U. (2020). How English foreign language students' autonomy and digital competence relate to their writing achievement. *Tadris: Jurnal Keguruan dan Ilmu Tarbiyah* 5(1), 77–86. <https://doi.org/10.24042/adris.v5i1.5760>.
- Aufschnaiter, C. V., & Rogge, C. (2012). How research on students' processes of concept formation can inform curriculum development. In D. Jorde & J. Dillon (Eds.), *Science Education Research and Practice in Europe* (pp. 63–90). Sense Publishers.
- Basilotta-Gómez-Pablos, V., Matarranz, M., Casado-Aranda L. A., & Otto, A. (2022). Teachers' digital competencies in higher education: a systematic literature review. *International Journal of Educational Technology in Higher Education*, 19(8). <https://doi.org/10.1186/s41239-021-00312-8>.
- Belda-Medina, J., & Calvo-Ferrer, J. R. (2022). Integrating augmented reality in language learning: pre-service teachers' digital competence and attitudes through the TPACK framework. *Education and Information Technologies*, 27. <https://doi.org/10.1007/s10639-022-11123-3>.
- Benali, M., Kaddouri, M., & Azzimani, T. (2018). Digital competence of Moroccan teachers of English. *International Journal of Education and Development using Information and Communication Technology*, 14(2), 99–120.
- Chabert, A. (2021). Account of a foretold death: Analysing the response to the pandemic in Spanish schools. *Journal of Language and Education*, 7(4), 42–52. <https://doi.org/10.17323/jle.2021.11677>.
- Çebi, A., & Reisoğlu, İ. (2022) Defining “digitally competent teacher”: An examination of pre-service teachers' metaphor. *Journal of Digital Learning in Teacher Education*, 38(4), 185–198, <https://doi.org/10.1080/21532974.2022.2098210>
- Del-Moral-Pérez, M. E., Villalustre-Martínez, L., & Neira-Piñeiro, M. R. (2019). Teachers' perception about the contribution of collaborative creation of digital storytelling to the communicative and digital competence in primary education schoolchildren. *Computer Assisted Language Learning*, 32(4), 342–365. <https://doi.org/10.1080/09588221.2018.1517094>

- Engen, B. K., Giæver, T., Gudmundsdottir, G. B., Hatlevik, O., Mifsud, L., & Tomte, K. (2014). Digital natives: Digitally competent? *Proceedings of the Society for Information Technology & Teacher Education International Conference*.
- Fauzi, I. (2021). Teaching English using whatsapp during learning from home: impacts to students and implication to teachers. *LET: Linguistics, Literature and Language Teaching Journal*, 11(2), 59-78. <https://doi.org/10.18592/let.v11i2.4918>.
- Ferrari, A. (2012). Digital competence in practice: An analysis of frameworks. *Luxembourg: Publications Office of the European Union*.
- Gudmundsdottir, G. B., Gassó, H. H., Rubio, J. C. C., & Hatlevik, O. E. (2020). Student teachers' responsible use of ICT: Examining two samples in Spain and Norway. *Computers & Education*, 152. <https://doi.org/10.1016/j.compedu.2020.103877>
- Guillén-Gámez, F. D., Lugones, A., & Mayorga-Fernández, M. J. (2019). ICT Use by pre-service foreign languages teachers according to gender, age and motivation. *Cogent Education*, 6(1). <https://doi.org/10.1080/2331186X.2019.1574693>.
- Hidalgo, F., Parra M. E. G., & Abril, C. (2020). Digital and media competences: Key competences for EFL teachers. *Teaching English with Technology*, 20, 43-59.
- Ilomäki, L., Kantosola, A., & Lakkala, M. (2011). What is digital competence? *Brussels: European Schoolnet*. <http://linked.eun.org/web/guest/in-depth3>.
- Ilomäki, L., Paavola, S., Lakkala, M., & Kantosalo, A. (2016). Digital competence- an emergent boundary concept for policy and educational research. *Education and Information Technologies* 21, 655–679. <https://doi.org/10.1007/s10639-014-9346-4>.
- Iskandar, I., Sumarni, S., Dewanti R., & Asnur, M. (2022). Infusing digital literacy in authentic academic digital practices of English language teaching at universities. *International Journal of Language Education* 6(1), 75-90. <https://doi.org/10.26858/ijole.v6i1.31574> .
- Kassymova, G. M., Tulepova, S. B., & Bekturova, M. B. (2023). Perceptions of digital competence in learning and teaching English in the context of online education. *Contemporary Educational Technology*, 15(1). <https://doi.org/10.30935/cedtech/12598>.
- Khan, S. (2014). Qualitative research method: Grounded theory. *International Journal of Business and Management*, 9(11). <https://doi.org/10.5539/ijbm.v9n11p224>.

- Kopinska, M. (2020). Beyond the novelty effect: EFL learners' attitudes towards ICT use in the classroom. *Hungarian Education Research Journal*, 10(1), 1-15. <https://doi.org/10.1556/063.2020.00001>.
- Laeli, A. F., Setiawan, S., & Anam, S. (2020). Reading digital text as a new literacy in ELT: Teachers' perception & practices. *Eternal (English, Teaching, Learning & Research Journal)*. <https://doi.org/10.24252/Eternal.V62.2020.A9>.
- Lee, M. Thayer, T., & Madyun, N. (2008). The evolution of the European Union's lifelong learning policies: An institutional learning perspective. *Comparative Education*, 44(4), 445-463. <https://doi.org/10.1080/03050060802481496>.
- Maiier, N., & Koval, T. (2021). How to develop digital competence in pre-service FL teachers at university level. *Advanced Education*, 18. <https://doi.org/10.20535/2410-8286.227639>.
- Meirovitz, T., Russak, S., & Zur, A. (2022). English as a foreign language teachers' perceptions regarding their pedagogical-technological knowledge and its implementation in distance learning during COVID-19. *Heliyon*, 8. <https://doi.org/10.1016/j.heliyon.2022.e09175>.
- Natilli, M., Rossi, A., Trecroci, A., Cavaggioni, L., Merati, G., & Formenti, D. (2022). The long-tail effect of the COVID-19 lockdown on Italians' quality of life, sleep and physical activity. *Sci Data*, 9(250). <https://doi.org/10.1038/s41597-022-01376-5>.
- Niu, L., Wang, X., Wallace, M. P., Pang, H., & Xu, Y. (2022). Digital learning of English as a foreign language among university students: How are approaches to learning linked to digital competence and technostress? *Journal of Computer Assisted Learning*, 38, 1332-1346. <https://doi.org/10.1111/jcal.12679>.
- Nugroha, A., Triana, Y., & Zulaiha, D. (2022). Digital teaching awareness and practice: Narratives from Indonesian ESP teachers. *ELT Echo: The Journal of English Language Teaching in Foreign Language Context*, 7(2). <https://doi.org/10.24235/eltecho.v7i1.9905>.
- Pascual, D. (2019). Learning English with travel blogs: A genre-based process-writing teaching proposal. *Profile: Issues in Teachers' Professional Development*, 21(1), 157-172. <https://doi.org/10.15446/profile.v21n1.71253>
- Rahimi, A. R., & Tafazoli, D. (2022) The role of university teachers' 21st-century digital competence in their attitudes toward ICT integration in higher education: Extending the theory of planned behavior. *The JALT CALL Journal*, 18(2), 238-263. <https://doi.org/10.29140/jaltcall.v18n2.632>
- Redecker, C., & Punie, Y. (Eds.). (2017). *European framework for the digital competence of educators: DigCompEdu*. Luxembourg: Publications Office of the European Union.

- Røkenes, F. M., & Krumsvik, R. J. (2014). Development of student teachers' digital competence in teacher education. *Nordic Journal of Digital Literacy*, 9(4), 250-280. <https://doi.org/10.18261/ISSN1891-943X-2014-04-03>.
- Scanni, S. (2022). Distance education in Italy: Investigating foreign language distance teaching and learning in secondary schools during COVID-19 lockdown. *Modern Languages Open*, 1(3), 1-10. <https://doi.org/10.3828/mlo.v0i0.388>
- Simões, A. V. (2021). Developing multilingual competence and cultural awareness through forms of non-formal learning: A contribution to sustainable employability, active citizenship and social inclusion. *European Journal of Education*, 4(2). <https://doi.org/10.26417/670hst77c>.
- Smagulova, G. Z., Sarzhanova, G. B., & Tleuzhanova, G. K. (2021). The development of future foreign language teachers' digital competences in creating multimedia tutorials. *The Education and Science Journal*. 23(6), 216-245. <https://doi.org/10.17853/1994-5639-2021-6-216-245>.
- Solomakha A., & Kosharna N. (2020). Preparation of future teachers for using digital technologies in the process of early foreign language teaching. *Educological Discourse*, 3(30). <https://doi.org/10.28925/2312-5829.2020.3.8>
- Tomczyk, Ł., Jáuregui, V. C., Amato, C. A. L. H., Muñoz, D., Arteaga, M., Solomon Sunday Oyelere, S. S., Akyar, Ö. Y., & Porta, M. (2021). Are teachers techno-optimists or techno-pessimists? A pilot comparative among teachers in Bolivia, Brazil, The Dominican Republic, Ecuador, Finland, Poland, Turkey, and Uruguay. *Education and Information Technologies*, 26, 2715-2741. <https://doi.org/10.1007/s10639-020-10380-4>
- Williams, M., & Moser, T. (2019). The art of coding and thematic exploration in qualitative research. *International Management Review*, 15(1).
- Wong, K. M., & Moorhouse, B. L. (2021). Digital competence and online language teaching: Hong Kong language teacher practices in primary and secondary classrooms. *System*, 103. <https://doi.org/10.1016/j.system.2021.102653>
- Yılmaz-Ergül, D., & Taşar, M. F. (2022). Development and validation of the teachers' digital competence scale (TDiCoS). *Journal of Learning and Teaching in Digital Age*, 8(1), 148-160. <https://doi.org/10.53850/joltida.1204358>.

APPENDIX A

Table 2. List of Reviewed Journals

Name of Journal	Number of Articles
System	1
Computers & Education	1
Heliyon	1
Journal of Computer Assisted Learning	1
Computer Assisted Language Learning	1
Education and Information Technologies	2
Issues Teach.	1
International Education Studies	1
International Journal of Education and Development using Information and Communication Technology	1
Eternal (English, Teaching, Learning & Research Journal)	1
Modern Languages Open	1
The Education and Science Journal	1
ELT Echo: The Journal of English Language Teaching in Foreign Language Context	1
Advanced Education	1
Cogent Education	1
Tadris: Jurnal Keguruan dan Ilmu Tarbiyah	1
Educological Discourse	1
LET: Linguistics, Literature and English Teaching Journal	1
Journal of Language & Education	1
Journal of Digital Learning in Teacher Education	1
Hungarian Education Research Journal	1
European Journal of Education	1
The JALT CALL Journal	1
Total	24