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Improving Prospective Basic Education Teachers' Capabilities on Digital Literacy: A Systematic Literature Review

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Abstract

Digital literacy is a fundamental competency that must be mastered in the 21st century. Digital literacy skills are the key to presenting interesting, interactive, actual, and factual learning. Therefore, efforts to improve the digital literacy abilities of prospective teachers need to be carried out. The purpose of this research is to explore the efforts that need to be made by teachers and institutions to improve teachers' digital literacy skills. The method used in this research is a literature study. Literature is obtained from various kinds of research articles that are reputable in the national and international spheres. Article analysis was carried out by examining efforts to increase digital literacy skills from each source, and categorizing several efforts into several categories. The results of this study indicate that there are several efforts to improve the digital literacy abilities of prospective teachers, including, procuring partnership programs between tertiary institutions and schools, developing digital-based teaching modules, developing digital web in the learning process, increasing digital literacy skills of prospective teachers using product-based methods, such as making videos/learning media), using problem-solving-based methods, using some frameworks in implementing education, procuring supporting facilities and developing curricula that integrate digital literacy content into each subject.

Keywords**:** *digital literacy, prospective teacher, basic education*.

Abstrak

Literasi digital merupakan kompetensi dasar yang harus dikuasai di abad 21. Kemampuan literasi digital menjadi kunci tersajinya pembelajaran yang menarik, interaktif, aktual, dan faktual. Oleh karenanya, upaya peningkatan kemampuan literasi digital calon guru perlu dilakukan. Tujuan dari penelitian ini adalah untuk mengeksplorasi upaya-upaya yang perlu dilakukan oleh guru maupun lembaga untuk meningkatkan kemampuan literasi digital guru. Metode yang digunakan dalam penelitian ini adalah studi literatur. Literatur didapatkan dari berbagai macam artikel penelitian yang bereputasi dalam ranah nasional dan internasional. Analisis artikel dilakukan dengan menelaah upaya-upaya peningkatan kemampuan literasi digital dari setiap sumber, dan mengkategorikan beberapa upaya menjadi beberapa kategori. Hasil penelitian ini menunjukkan terdapat sejumlah upaya dalam meningkatkan kemampuan literasi digital calon guru, diantaranya, pengadaan program kemitraan antar perguruan tinggi dan sekolah, pengembangan modul ajar berbasis digital, pengembangan web digital dalam prose pembelajaran, meningkatkan kemampuan literasi digital calon guru dengan menggunakan metode perbasis produk (seperti membuat video/media pembelajaran), menggunakan metode berbasis pemecahan masalah, penggunaan sejumlah frame work dalam pelaksanaan pendidikan, pengadaan fasilitas yang mendukung dan mengembangkan kurikulum yang mengitegrasikan konten literasi digital ke dalam setiap mata pelajaran.

Kata kunci: *literasi digital, calon guru, pendidikan dasar*.

INTRODUCTION

Digital literacy is one of the fundamental competencies that must be mastered in the 21st century or the big data era (Pu & Yang, 2021). In this century, technology is developing so rapidly that it can penetrate space and time. Information can not only be accessed within the scope of one region or one country but it can also be accessed by all people in any layer of the world. For example, the portrait of education in Finland can be known by the Indonesian people without having to come to Finland. The spread of the information took place so quickly. Even the super smart society road map (Society5.0) which was initiated by Japan describes a new ideology in technological progress, where technology is not considered a threat but a necessity in social life (Cem, 2020). So that if this technological progress can be responded to well, it will be able to bring up several advantages in all sectors, including the education sector.

Teachers can access various kinds of learning media from around the world quickly, and teachers also easier to present realistic learning, because, through the sophistication of the internet, anything can be searched and accessed. For example, when the teacher wants to explain the various characteristics of flora and fauna in the world, the teacher does not need to bother looking in print media, just search through the internet, the types of flora and fauna, as well as an explanation of each of this flora and fauna. accessible and visible to students. However, the question is whether teachers have good digital literacy skills in operating technology and finding information that suits their needs

Research on digital literacy is busy in various countries (Leaning, 2019). Digital literacy is currently very much needed with the hope that education and the learning process will become more collaborative and elaborative (Mardiani et al., 2021). Digital literacy can be defined as the technological knowledge and skills necessary for individuals to lead

productive lives, realize lifelong learning activities, and make positive contributions to society (Çam & Kiyici, 2017).

One of the teacher's abilities in digital literacy is also influenced by the current condition of students. Where students are currently growing and developing in the digital world. So that digital access for students has now become part of their lives. However, the use of technology is often more social, procedural, and gamming, and not for expanding understanding of concepts (Kimbell-Lopez et al., 2016). This condition needs to be responded to by the world of education so that students' habits in operating digital devices can have a positive impact on intellectual and character development, through digital literacy activities (Susanto, 2021).

Several dimensions of digital literacy include operational skills (browsing, solving technical problems using digital devices, creating programs, etc.), critical thinking skills, collaborative skills, and peacekeeping skills (Wahjusaputri & Nastiti, 2022). Therefore, if prospective teachers have good digital literacy skills, they will be able to design good teaching practices, which integrate aspects of digital literacy into learning (Tejedor et al., 2020). As a result, learning becomes closer to the habits of students who live in the digital era.

Digital literacy skills need to be developed not only for someone who has become a teacher but also for prospective teachers. If the prospective teacher already has good digital literacy skills, this ability will greatly support his professional and pedagogical competence when the prospective teacher has become a teacher (Sánchez-Cruzado et al., 2021). In addition, the ability to digital or media literacy shows a positive correlation with the critical thinking skills of prospective teachers (Kaplan, 2021). Where the ability to think critically is one of the skills that become one of the priorities for the development of Merdeka Belajar Kampus Merdeka (MBKM). Prospective teachers need to have competency in critical thinking to make students able to think critically. As stated by the Indonesian Minister of Education, if MBKM already exists in teachers, then MBKM will exist in students (Noor & Rahmatullah, 2020). For this reason, there needs to be an effort or program carried out by the institution in improving the digital literacy skills of prospective teachers (Volante & Fazio, 2007). Digital literacy is not difficult to develop, it only requires an intense process so that prospective teachers become accustomed to doing digital literacy well that they have an awareness of the importance of digital literacy.

The study emphasizes the importance of digital technology as an integral part of modern society and as the driving force of economic development, the challenges, and the perspectives of modern digital society. We further explore the basic concepts of digital society as 'digital culture', and 'digital competence' Research on efforts to increase digital literacy has been carried out by several previous researchers. Anisimova (2020) examined efforts to increase the digital literacy skills of prospective teachers through the use of e-modules. Rakimahwati and Ardi (2019) examined efforts to increase students' digital literacy skills through the use of interactive games. Patmanthara and Hidayat (2018) examines efforts to increase students' digital literacy skills through the implementation of blended learning models. Furthermore, Çocuk and Yelken (2018) examine efforts to increase digital literacy through the use of the digital web.

There have been many studies on efforts to increase digital literacy, but some of these studies have focused more on testing a program to determine its effectiveness. Meanwhile,

this study aims to map the efforts to develop digital literacy which is reviewed documentative through literature study research methods. Efforts to develop digital literacy skills have been explored are several digital literacy development programs that have been proven to be effectively implemented by previous research. This research is expected to be able to provide academic references in determining digital literacy development programs for prospective teachers. As Ayyildiz et al. (2021) found Institutions or educators need to update programs, and training, keep up with the times and have a role in the digital world as a form of increasing self-competence in education in the digital era.

METHODS

This research is a type of systematic literature review study using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) method. PRISMA is a research method that is carried out by identifying, selecting, evaluating, collecting, and analysing data and summarizing the results of primary research articles to present more comprehensive and balanced data (Idris et al., 2022).

The PRISMA method is used starting from the selection of articles that are relevant to the focus of this research. The selection of articles using the PRISMA method consists of 4 stages, namely:

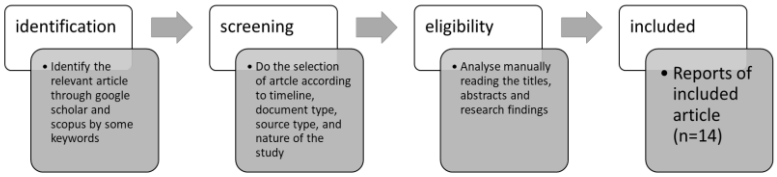

Figure 1. Selection of articles using the PRISMA method

Finding relevant articles is done by determining the main keywords and then looking for synonyms or other words that are closely related to these keywords (Idris et al., 2022). Keywords can highlight research questions that are often discussed by researchers. Keyword analysis can clarify the researcher's focus on the problem (Hao et al., 2021). The keywords used in this research are digital literacy, efforts to increase digital literacy, develop digital literacy, digital literacy prospective teachers, and other keywords recommended by Google Schooler and Scopus.

Furthermore, at the screening stage, the articles that have been collected are selected based on criteria, including the timeline, type of document, type of source, and nature of the research. As the following table:

Table 1. Screening Criteria

Criteria	Inclusion	Exclusion
Publication Timeline	2012-2022	2011 and before
Document Type	Article	Book, web article, book chapters, module
Source Type	Journal	Non-Journal
Nature of The Study	Focus in school	Not focusing on school

In the eligibility determination stage, the researcher did the analysis manually by reading the titles, abstracts, and research findings from some articles that had been screened. There are two types of articles that are grouped, namely articles that discuss digital literacy skills improvement programs from experimental results and literature reviews. After carrying out the analysis and final identification, the researcher determined 16 articles to be used as a literature review.

RESULTS AND DISCUSSION

The profile review of the article focuses on efforts that can be made to improve the digital literacy skills of prospective teachers. Efforts that arise can be done by teachers, institutions, and partnerships with society:

Table 2. Article Profile

No.	Writer, Year, Location	The efforts
1.	Tatiana Shopova, (2014), Bulgaria	Develop standards, scientific guidelines, and modules to improve digital literacy competencies in tertiary institutions
2.	Kimberly Kimbell-Lopez, Carrice Cummins & Elizabeth Manning, (2016), the United States of America	Using *framework WRITE* *W- What to Write* *R - Research, brainstorming about the topic, planning* *I - Initial draft* *T - Two kinds of editing—content/mechanics* *E - Extending to an audience, publishing*
3.	Charles R. Greenwood, Mary Abbott, Constance Beecher, Jane Atwater, and Sarah Petersen, (2017), Kansas	Developing 3D literacy media
4.	Julie L Rosenthal, William Paterson, Marie Donnantuono, William, Mary Lebron, Christina Flynn, (2017), New Jersey: the United States of America	Procurement of literacy courses based on *Professional Development School (PDs)*
5.	Siriwatchana Kaeophanuek, Jaitip Na-Songkhla, and Prachyanun Nilsook, (2018), Thailand	- build an infrastructure system that can facilitate prospective teachers in using technology - developing curriculum
6.	Halil Erdem Çocuk1, Tugba Yanpar Yelken, (2018), Turkey	Use of web-based digital
7.	Diane Watt, (2019), Canada	Product-based learning, prospective teachers practice their critical digital literacy skills by making videos
8.	Stacy Delacruz & Paula Guerra (2019), the United States of America	Organizing a partnership program between tertiary institutions and the community through the Discovery Center–a university tutoring program, between prospective teachers, students, and parents.

9.	Stacy Delacruz & Virginie Jackson, (2019), the United States of America	Improving the digital literacy skills of prospective teachers through course methods that use a project-based approach
10.	R Rakimahwati1, Z Ardi, (2019), Indonesia	Using interactive *game*
11.	Shannon M. Hilliker dan Erin K. Washburn, (2021), Charlotte	Organizing partnership programs between universities and schools
12.	Ni Made Suniyasih, Ni Made Ratminingsih, Gede Budasi, (2020), Indonesia	Using digital media
13.	Ellina Sergeevna Anisimova, (2020), Kazan	Using digital module
14.	Marheny Lukitasari, Jeffry Handhika, Wasilatul Murtafiah, Akhmad Sukri, (2021), Indonesia	Provide opportunities for students to explore through written arguments in online learning

Digital literacy involves more than the ability to use software or operate digital devices. Digital literacy includes emotional, motor, sociological, and complex abilities (Eshet-Alkalai, 2004). Digital literacy skills do not appear instantly, there are a number of efforts that need to be made intensely, planned, and earnestly so that the digital literacy skills of prospective teachers can increase. From a review of several kinds of literature that have relevance to increasing digital literacy skills, it was found that a number of different efforts were made between one study and another. There are efforts to increase digital literacy skills that are carried out on a fairly large scale, needing to involve many parties, and there are also efforts made from a narrower scope so that it does not require much time and money to implement. However, what is clear is that increasing digital literacy skills needs to be taken seriously, as research results (Yamaç & Öztürk, 2019), that digital literacy is an ability that has complex and multi-false elements, including the ability to read, synthesize information and use information sources appropriately.

The first effort to improve digital literacy skills is the provision of literacy courses based on Professional Development Schools (PDs) (Rosenthal et al., 2017). PDS-based literacy courses are a partnership program between universities and schools. The technical implementation of PDS-based literacy courses is that universities send prospective teachers to become tutors in literacy courses held by schools. This course is attended by students in elementary schools who have not been able to achieve learning outcomes in literacy aspects. PDS-based literacy courses are conducted outside of school hours, after school, or on holidays. In the course program, prospective teachers are tasked with providing a number of additional lessons to improve student's literacy skills. So prospective teachers must strive to provide learning resources, media, and technology-based materials that are able to attract and facilitate students in improving their literacy skills. During course implementation, prospective teachers are accompanied by professional teachers. So that prospective teachers can have discussions in preparing interesting lessons and share about the obstacles they face (Hilliker & Washburn, 2021). Through this partnership program, it was found that the literacy skills of students were increasing, and the digital literacy skills of prospective teachers also increased because they were trying to hone their skills in digital literacy to be able to provide quality learning. As the results of the research Techataweewan and

Prasertsin (2018) show that digital literacy has a positive effect on student skills, which is important for learning success.

Efforts to improve digital literacy skills through partnership programs are also found in other studies, namely those conducted by (Delacruz & Guerra, 2019; Delacruz & Jackson, 2019). This partnership program is implemented using a project-based method, where 25 prospective teachers carry out teaching practices which are divided into 5 schools. Prior to undertaking this project, prospective basic education teachers were involved in a number of digital critical literacy activities based on the grade level to be taught, for one semester. For example, in a low-grade course, prospective teachers are presented with several texts according to their respective classes and write critical literacy questions from the text. Prospective teachers are asked to create a narrative using a number of applications that can be used in digital literacy, such as chatterpix kids etc. After prospective teachers take the course and understand the concept of digital critical literacy, prospective teachers are tasked with practicing it in learning with students. Through this practice, the ability of prospective teachers in digital critical literacy is growing (not only limited to what they get during the course). Even prospective teachers also have different perceptions of digital critical literacy learning.

In line with the efforts to increase digital literacy skills, research Meyers et al. (2019) also reflects between theory and practice. to provide hands-on learning experiences for prospective teachers. Sources of understanding of prospective teachers come from the process they go through, the environment, communication, and learning resources. So, it is necessary to provide opportunities for prospective teachers to read a lot of information in digital media to get used to giving newer and relevant arguments to the existing context (Lukitasari et al., 2021). In this study, digital literacy skills were developed more on information and data literacy indexes.

In addition to the partnership program, the improvement of digital literacy skills can also be done through the development of modules. The module developed is a digital-based module that can be a source of independent learning for prospective teachers. Digital-based modules not only function to strengthen material but also function to improve the digital literacy skills of prospective teachers (Suniyasih et al., 2020). Through the digital module, prospective teachers can improve their operational skills, and data and information literacy, and are able to improve their critical literacy skills. Where these three things are part of the digital literacy index.

An increase in digital literacy skills through digital modules was also found in research conducted by Anisimova (2020), where he used an experimental study to determine its efficacy on prospective teachers. Digital modules developed in learning include, "Interactive Didactic Games", "Animation Fundamentals", "Programming Fundamentals" and "Network Technology". What's interesting about using these modules is that prospective teachers have to create a number of games, videos, animated films, blogs, and websites that they can use when they practice teaching in schools. Prospective teachers are also required to be able to critically analyse and evaluate the products they make. Through this program, their operational skills and critical digital literacy are the keys to the success of the projects they must complete.

In line with this research, Çocuk and Yelken (2018) also conducted research on the use of a digital-based web to improve the digital literacy of prospective teachers. This study

involved 60 prospective teachers in Turkey, with 50% as the experimental class and 50% as the control class. From the results of the pre-test and post-test, the use of a digital-based web can improve the digital literacy skills of prospective teachers. This experiment requires prospective teachers to create digital stories according to their field curriculum and prepare their lessons on a digital story application every week. Through this program, the literacy skills of prospective teachers can be honed through their habits of processing the information or data they get into an interesting story as teaching material when practicing at school. Operational skills can also be developed through the use of the digital-based web that must be mastered.

In addition to web development or digital-based modules, as the results of the research described previously, the development of digital literacy skills can also be done through a number of learning methods. First, the use of product-based learning methods. Project-based learning provides an opportunity for prospective teachers to internalize digital spaces and tools in learning. Projects carried out can be in the form of analysing materials that are difficult for students to understand at school. Through these problems, prospective teachers are assigned to produce learning videos that can answer students' problems in understanding material that is considered difficult. Through video production, prospective teachers will learn to operate computer devices, use a number of applications, overcome operational obstacles in making digital videos, and also have to think critically in integrating the curriculum into the learning process. Research conducted by Greenwood et al. (2017); Watt (2019) shows through video production or the use of digital media can improve the digital literacy skills of prospective teachers. Thus, when prospective teachers can present digital-based learning well, the needs of participants' education in the digital era will also be fulfilled.

Second, the use of problem-solving methods in increasing digital critical literacy. Critical thinking is the ability to synthesize, analyse, or evaluate information. Problem-solving can be defined as the ability to identify digital needs and resources, make decisions from digital information, solve conceptual problems with digital media, creatively use technology, solve technical problems and update self-competence (Ferrari et al., 2013).

Switching from increasing digital literacy skills through the use of a number of learning methods, the next effort that can be made is to use a framework that can motivate prospective teachers in digital literacy. The framework is reflected in the acronym WRITE (Kimbell-Lopez et al., 2016).

Table 3. WRITE Acronym

Acronym	Explanation
W	What to Write
R	Research, brainstorming about the topic, planning
I	Initial draft
T	Two kinds of editing, content/mechanics
E	Extending to an audience, publishing.

The framework is carried out in four phases. The first phase can be designed to introduce prospective teachers to applications, platforms, or other devices that have never been used before, and are very much needed in an effort to support their professionalism as prospective teachers. The second phase is designed by providing opportunities for

prospective teachers to learn and develop their digital literacy skills using applications, platforms, or other devices that have been studied in phase 1. The third phase is designed by giving prospective teachers an assignment to make a product from what has been mastered in phase 1, two by combining with other previously mastered applications, platforms, or devices or with new applications. Phase four is designed by providing opportunities for prospective teachers to evaluate the products that have been made and develop independently from the results of the evaluations that have been carried out.

In line with the framework, increasing digital literacy skills can also be done through the development of the DigEuLit (Digital Europe Literacy) program. DigEuLit was developed with reference to the definition of digital literacy which includes individual awareness, attitude, and ability to properly use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, build new knowledge, create media expressions, and communicating with others, in the context of certain life situations, and to enable constructive social action (Martin & Grudziecki, 2006).

Institutively, increasing digital literacy can also be done by providing educational facilities that support curriculum development. Universities/colleges need to establish clear policies and provide a learning environment that facilitates prospective teachers in using technology. Such as, building an infrastructure system and encouraging the use of practical and progressive e-learning in every subject. Second, the curriculum must include content for skills that promote digital literacy by integrating the content into each subject, because digital literacy skills are not only sufficient by attending workshops, seminars, or workshops but also must be internalized in the learning process. Third, the instructional design must be a form of student-cantered learning. Students should be encouraged to practice and fix problems with themselves with technology as a facility for learning. Each step should include the development of students' thinking and should focus on the assessment by having students develop their thinking using strategy questions (Kaeophanuek et al., 2018). Evaluation can help instructors learn about attitudes and behaviours when using social media. An educator also needs to provide questions that are appropriate to the real situation. Educators also need to provide case studies that encourage students to think critically, ask questions, and discuss their answers in class. Most of the students are aware of what they have to do, but they find it difficult to act out in their daily life. Therefore, this is a challenging part of evaluating digital literacy.

Based on the research results showed that digital literacy can be interpreted as the ability to search for, and use the information and use digital tools correctly and with full benefits (Irving, 2016). Digital literacy can also be seen as a potential for creating and communicating digital content, involving critical curriculum development (Freire, 2000). Studies in several countries have shown that the level of digital literacy of future teachers is not high enough (Anisimova, 2020). This condition strengthens efforts to increase the digital literacy component in preparing future educator candidates, even digital literacy also needs special attention to improve the four educator competencies, including pedagogic, professional, personal, and social competencies (Jannah et al., 2020).

If digital literacy is studied from the aspect of social psychology, increasing digital literacy skills can be done by creating new biases through observation or imitation models that inspire a person's desire to improve their digital literacy skills (Jalil et al., 2021). The implication of this theory is that institutions or educators need to form a new digital-based

learning environment. Such as the provision of technology tools, the formation of a digital literacy community, and the number of other supporting tools (McDougall et al., 2018). Prospective teachers are equipped with the ability to design digital-based learning, be able to use a variety of learning platforms, and arrange learning activities using modern technology.

Improving digital literacy skills can be done in various ways, some of which are categorized into 4 categories including through partnership programs, developing learning resources, implementing a number of learning methods that can improve digital literacy skills, developing framework, and improving the quality of infrastructure, as well as curriculum development. Some of these improvement efforts are tabulated in the following table:

Table 4. Efforts to Enhance Digital Literacy Capability

No.	Program Category	Form of Digital Literacy Capacity
1.	Procurement of Partnership Programs between Universities and Schools	based literacy courses *Professional Development School (PDs)*
		Implementation of partnership programs with schools Kindergarten and Elementary Schools with a project-based model
2.	Development of digital-based learning resources	Development of digital-based modules
		Development of digital web in the learning process
3.	Using a number of methods to improve the digital literacy skills of prospective teachers	Using problem-solving
		Using product-based learning methods
4.	Learning framework	Implementing learning using *the WRITE framework*
		Implementing the *DigEuLit*
5.	Improvement of facilities and infrastructure	Procurement of supporting facilities, such as building infrastructure systems and encouraging the use of e-learning practical and progressive
6.	Development	The curriculum should include content for skills that promote digital literacy by integrating that content into each subject

This can be achieved well if the institution is committed to developing the digital literacy skills of prospective teachers. Educators also consistently need to implement digital-based learning for prospective teachers to use, understand and use their digital literacy skills to support their role as prospective teachers in basic education.

CONCLUSION

The digital literacy skills of prospective teachers can be improved through several programs in education. The program includes providing partnership programs between universities and schools, developing digital-based teaching modules, developing digital webs in the learning process, increasing the digital literacy skills of prospective teachers using product-based methods (such as making videos/learning media), and using problem-solving-based methods. , the use of a number of frameworks in the implementation of

education, the provision of supporting facilities, and the development of a curriculum that integrates digital literacy content into each subject.

REFERENCES

Anisimova, E. S. (2020). Digital literacy of future preschool teachers. *Journal of Social Studies Education Research*, *11*(1), 230–253.

Ayyildiz, P., Yilmaz*, A., & Serif, H. (2021). Exploring Digital Literacy Levels and Technology Integration Competence of Turkish Academics. *International Journal of Educational Methodology*, *7*(1), 15–31. https://doi.org/10.12973/ijem.7.1.15

Çam, E., & Kiyici, M. (2017). *Perceptions of Prospective Teachers on Digital Literacy*. *5*(4).

Cem, N. (2020). Analysis of Digital Literacy and Metaphoric Perceptions of Teacher Candidate. *International Journal of Educational Methodology*, *6*(1), 135–145. https://doi.org/10.12973/ijem.6.1.135

Çocuk, H. E., & Yelken, T. Y. (2018). The Effect of the Web Based Digital Story Applications on the Digital Literacy Levels of Turkish Teacher Candidates. *Asian Journal of Education and Training*, *4*(2), 132–136. https://doi.org/10.20448/journal.522.2018.42.132.136

Delacruz, S., & Guerra, P. (2019). Building Sustainable Afterschool Literacy Programs by Partnering with University Teacher Candidates. *School Community Journal*, *29*(2), 81–103.

Delacruz, S., & Jackson, V. (2019). Preservice Elementary Teachers Engaging in Digital Critical Literacy Practices to Advocate for Critical Perspectives of Text. *Literacy Practice & Research*, *44*(2), 5–17. https://acces.bibl.ulaval.ca/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=138261992&amp%0Alang=fr&site=ehost-live

Eshet-Alkalai, Y. (2004). Digital Literacy: A Conceptual Framework for Survival Skills in the Digital era. *Journal of Educational Multimedia and Hypermedia*, *13*, 93–106.

Ferrari, A., Punie, Y., & Bre, B. N. (2013). *DIGCOMP : A Framework for Developing and Understanding Digital Competence in Europe* . https://doi.org/10.2788/52966

Freire, P. (2000). *Pedagogy of the oppressed*. Continuum Press.

Greenwood, C. R., Abbott, M., Beecher, C., Atwater, J., & Petersen, S. (2017). *Development , Validation , and Evaluation of Literacy 3D : A Package Supporting Tier 1 Preschool Literacy Instruction Implementation and Intervention*. https://doi.org/10.1177/0271121416652103

Hao, S., Chiu, W., Lai, L., Jen, G., & Tsai, C. C. (2021). Research Trends in Technology - Enhanced Chemistry Learning : A Review of Comparative Research from 2010 to 2019. *Journal of Science Education and Technology*, *162*, 496–510. https://doi.org/10.1007/s10956-020-09894-w

Hilliker, S. M., & Washburn, E. K. (2021). *Family Literacy Night : A Student-Centered Clinically Rich Experience for Teacher Candidates in Literacy and TESOL*. https://doi.org/10.1177/0022057420904381

Idris, N., Talib, O., & Razali, F. (2022). Strategies in Mastering Science Process Skills in Science Experiments: a Systematic Literature Review. *Jurnal Pendidikan IPA Indonesia*, *11*(1), 155–170. https://doi.org/10.15294/jpii.v11i1.32969

Irving, H. (2016). Paper salvage in Britain during the Second World War. *Historical Research*, *89*(244), 373–393. https://doi.org/10.1111/1468-2281.12135

Jalil, A., Tohara, T., Shuhidan, S. M., Diana, F., Bahry, S., & Norazmi Bin Nordin, M. (2021). Exploring Digital Literacy Strategies for Students with Special Educational Needs in the Digital Age. *Turkish Journal of Computer and Mathematics Education*, *12*(9), 3345–3358.

Jannah, M., Prasojo, L. D., & Jerusalem, M. A. (2020). Elementary School Teachers' Perceptions of Digital Technology Based Learning in the 21st Century: Promoting Digital Technology as the Proponent Learning Tools. *Al Ibtida: Jurnal Pendidikan Guru MI*, *7*(1), 1. https://doi.org/10.24235/al.ibtida.snj.v7i1.6088

Kaeophanuek, S., Jaitip, N.-S., & Nilsook, P. (2018). How to Enhance Digital Literacy Skills among Information Sciences Students. *International Journal of Information and Education Technology*, *8*(4), 292–297. https://doi.org/10.18178/ijiet.2018.8.4.1050

Kaplan, K. (2021). The Relationship between Media Literacy Competencies and Critical Reading Self-Efficacy Perceptions of Prospective Teachers of Turkish. *International Journal of Curriculum and Instruction*, *13*(3), 2513–2534.

Kimbell-Lopez, K., Cummins, C., & Manning, E. (2016). Developing Digital Literacy in the Middle School Classroom. *Computers in the Schools*, *33*(4), 211–226. https://doi.org/10.1080/07380569.2016.1249731

Leaning, M. (2019). An approach to digital literacy through the integration of media and information literacy. *Media and Communication*, *7*(2 Critical Perspectives), 4–13. https://doi.org/10.17645/mac.v7i2.1931

Lukitasari, M., Handhika, J., Murtafiah, W., & Sukri, A. (2021). The schemes of students' understanding through digital argumentation in online learning during pandemic COVID-19. *Journal of Education and Learning (EduLearn)*, *15*(3), 368–375. https://doi.org/10.11591/edulearn.v15i3.19088

Mardiani, F., Anis, M. Z. A., & Hermawan, M. D. (2021). Digital Literacy in the Transformation of Historical Learning in the Time of Covid-19. *Jurnal Socius*, *10*(2), 1. https://doi.org/10.20527/jurnalsocius.v10i2.11198

Martin, A., & Grudziecki, J. (2006). DigEuLit: Concepts and Tools for Digital Literacy Development. *Innovation in Teaching and Learning in Information and Computer Sciences*, *5*(4), 249–267. https://doi.org/10.11120/ital.2006.05040249

McDougall, J., Readman, M., & Wilkinson, P. (2018). The uses of (digital) literacy. *Learning, Media and Technology*, *43*(3), 263–279. https://doi.org/10.1080/17439884.2018.1462206

Meyers, J., Howard, C., Lambert, C., & Adams-Budde, M. (2019). Literacy Teacher Education: Perceptions of Teacher Candidates and Teacher Educators. *Excellence in Education Journal*, *8*(1), 5–37. http://ezproxy.usq.edu.au/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1208712&site=ehost-live%0Ahttp://www.excellenceineducationjournal.org/Journal_Archive.html

Noor, I. H., & Rahmatllah, N. (2020). *Inovasi Tata Kelola Sekolah Menengah Atas dalam Implementasi Kebijakan Merdeka Belajar* (Vol. 2020). Direktorat Sekolah Menengah Atas.

Patmanthara, S., & Hidayat, W. N. (2018). Improving Vocational High School Students Digital Literacy Skill through Blended Learning Model. *Journal of Physics: Conference Series*, *1028*(1). https://doi.org/10.1088/1742-6596/1028/1/012076

Pu, M., & Yang, H. (2021). *Research on the Cultivation of Students ' Information Literacy Ability Based on Large Data Analysis under the Current Situation of Network Media Research on the Cultivation of Students ' Information Literacy Ability Based on*

Large Data Analysis under the. 1–5. https://doi.org/10.1088/1742-6596/1744/3/032187

Rakimahwati, R., & Ardi, Z. (2019). An alternative Strategy for Increasing Indonesian Student Digital Literacy Skills through Interactive Game. *Journal of Physics: Conference Series*, *1339*(1). https://doi.org/10.1088/1742-6596/1339/1/012122

Rosenthal, J., Donnantuono, M., Lebron, M., & Flynn, C. (2017). Children's Literacy Growth, and Candidates' and Teachers' Professional Development Resulting from a PDS-Based Initial Certification Literacy Course. *School-University Partnerships*, *10*(1), 57–65.

Sánchez-Cruzado, C., Santiago Campión, R., & Sánchez-Compaña, M. T. (2021). Teacher digital literacy: The indisputable challenge after covid-19. *Sustainability (Switzerland)*, *13*(4), 1–29. https://doi.org/10.3390/su13041858

Suniyasih, N. M., Ratminingsih, N. M., & Budasi, I. G. (2020). Development of Multilingual Thematic Picture Dictionary: A Support for Literacy. *Jurnal Pendidikan Dan Pengajaran*, *53*(3), 236. https://doi.org/10.23887/jpp.v53i3.27508

Susanto, S. (2021). The Integration of Digital Literacy in Learning at Islamic Elementary School to Prevent the Students' Deviant Behavior. *Al Ibtida: Jurnal Pendidikan Guru MI*, *8*(2), 205. https://doi.org/10.24235/al.ibtida.snj.v8i2.9125

Techataweewan, W., & Prasertsin, U. (2018). Development of digital literacy indicators for Thai undergraduate students using mixed method research. *Kasetsart Journal of Social Sciences*, *39*(2), 215–221. https://doi.org/10.1016/j.kjss.2017.07.001

Tejedor, S., Cervi, L., Pérez-Escoda, A., & Jumbo, F. T. (2020). Digital literacy and higher education during COVID-19 lockdown: Spain, Italy, and Ecuador. *Publications*, *8*(4), 1–17. https://doi.org/10.3390/publications8040048

Volante, L., & Fazio, X. (2007). Exploring teacher candidates' assessment literacy: Implications for teacher education reform and professional development. *Canadian Journal of Education*, *30*(3), 749–770. https://doi.org/10.2307/20466661

Wahjusaputri, S., & Nastiti, T. I. (2022). Digital literacy competency indicator for Indonesian high vocational education needs. *Journal of Education and Learning (EduLearn)*, *16*(1), 1–7. https://doi.org/10.11591/edulearn.v16i1.20390

Watt, D. (2019). Video production in elementary teacher education as a critical digital literacy practice. *Media and Communication*, *7*(2 Critical Perspectives), 82–99. https://doi.org/10.17645/mac.v7i2.1967

Yamaç, A., & Öztürk, E. (2019). How Digital Reading Differs from Traditional Reading: An Action Research. *International Journal of Progressive Education*, *15*(3), 207–222. https://doi.org/10.29329/ijpe.2019.193.15

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