Effectiveness of Learning Models to Improve Digital Literacy: Systematic Literature Review (SLR)

Mutahharah Yunus[1], **Ghina Amaliah Nurdin**[2], **Nurhidayanti**[3], **Thamrin Tayeb**[4], **Ahmad Farham Majid**[5], **Baharuddin**[6]
Universitas Islam Negeri Alauddin Makassar, Jl. Sultan Alauddin No.63, Romang Polong, Kabupaten Gowa, Sulawesi Selatan, Indonesia
Author Correspondence Email: thamrin.teyeb@uin-alauddin.ac.id

ABSTRACT

This research aims to evaluate the effectiveness of various learning models in improving digital literacy skills, which include the skill of using information and communication technology effectively and responsibly, becoming increasingly important in this digital era. Through the Systematic Literature Review (SLR), this study examines various empirical studies that discuss learning models designed to improve digital literacy. The methods used in this study include identification, selection, and critical analysis of relevant articles from various scientific journals and reliable academic sources. The results of the study show that several learning models have proven to be effective in improving digital literacy skills, including: Project Based Learning learning model, Flipped Crassroom learning model, Problem Based Learning learning model, Literacy, Orientation, Collaboration, and Reflection (LOK-R) learning model. Therefore, it can be concluded that the importance of using innovative learning models in the curriculum to develop digital literacy among students and can show that the right learning model can effectively improve digital literacy skills.

Keywords: digital literacy, learning models, Systematic Literature Review

1). INTRODUCTION

Information and communication technology is the application of knowledge and skills that are utilized to disseminate information or messages with the aim of supporting the resolution of a problem, so as to achieve the goal of effective communication (Munti & Syaifuddin, 2020). The development of information and communication technology has brought significant changes in various aspects of life, both in politics, economics, culture, art and even in the field of education (Maritsa et al., 2021; Heryani et al., 2022; Hidayatullah et al., 2023). One of the main challenges that arise along with this development is the need to equip students with adequate digital literacy skills. This is because success in building digital literacy is one of the indicators of achievement in the field of education and culture in Indonesia (Jayantika & Namur, 2022). Digital literacy encompasses the

ability to access, understand, evaluate and use information from various digital platforms effectively. In other words, digital literacy relates to an individual's knowledge and skills in utilizing digital media (Septia & Wahyu, 2023). Digital literacy is assessed based on grammar, composition, typing skills, and an individual's ability to produce writing, images, audio, and design using technology (Syah et al., 2019). These skills are not only essential for academic success, but also to prepare individuals for the increasingly technology-driven dynamics of the world of work and daily life.

Digital literacy is one of the abilities expected in today's digital era, where technology is increasingly developing and demands that every field has these abilities. In this case, the field of education is the focus to have digital literacy skills so that knowledge is growing with the times. Digital literacy skills are not only about the ability to use technology such as cellphones and laptops, but everyone must know how to use technology by following basic rules so that they are not left behind and can be involved in the development of technology itself. According to Panjaitan et al. (2024) his ability is a way to socialize and be critical, creative and inspiring in learning by using technology so that education is not left behind. By applying digital, it is also expected that students can be active in ongoing discussions in learning, so that it will generate a critical and creative attitude in providing answers (Sari et al., 2024). In the field of education, digital literacy skills have been widely applied such as in the fields of social, religious and mathematics.

Individuals with digital literacy need to hone their search skills and devise strategies to use search engines to obtain the information they need. In addition, the ability to utilize technology and information from digital devices is also important to support effectiveness and efficiency in various aspects of life, such as academics, careers, and daily activities (Naufal, 2021). Despite digital literacy being one of the key competencies in the 21st century, there is evidence that digital literacy skills among learners are still at an inadequate level. As research shows Anggrasari (2020) which found that students' digital literacy skills are still low. This is due to various factors, including limited access to technology, lack of effective pedagogical guidance, and low awareness of the importance of digital literacy in the education curriculum.

To overcome this problem, various learning models have been developed and implemented with the aim of improving students' digital literacy skills. Some learning models that have proven effective in improving digital literacy include the Project Based Learning model (Faridah et al., 2022), Blended learning model (Rahmasiwi et al., 2023), Student Fasilitator and Explaining learning model (Suardipa

& Primayana, 2020), LOK-R learning model (Effrisanti, 2023), Flipped Classroom learning model (Yanuarto et al., 2021), and Problem Based Learning (PBL) learning model (Prasutri et al., 2019). Although there have been previous studies examining the effectiveness of learning models on digital literacy skills, the effectiveness of these models has not been thoroughly evaluated and compared. Therefore, a systematic literature review is needed to assess the extent to which existing learning models are successful in improving digital literacy. This review is important to provide guidance for educators and policy makers in selecting and designing the most appropriate learning models to improve digital literacy.

This research aims to conduct a Systematic Literature Review (SLR) to evaluate the effectiveness of various learning models in improving digital literacy skills. Through this approach, this research is expected to provide a comprehensive understanding of the most effective learning models, as well as the factors that influence their successful implementation in various educational contexts. The results of this research are expected to contribute to the development of learning strategies that are more effective and relevant to the demands of the digital era..

2). METHODS

This research uses the Systematic Literature Review (SLR) method. Systematic Literature Review is a method used to identify, assess, and interpret all research relevant to a particular research question, topic, or phenomenon being studied. This method aims to evaluate, review and recognize relevant research so that it can answer the specified research question (Faisal et al., 2024). The stages of this research are: 1) formulating the research question, 2) searching for relevant data, 3) setting inclusion and exclusion criteria, 4) selecting literature, 5) presenting data, 6) processing data and 7) drawing conclusions.

The first step involved creating research questions according to the needs of the topic to be researched. This research question focused on the learning model in improving digital literacy skills. The second step involved finding relevant data to answer the research question. In this process, the researcher found 980 articles from various national journals through Google Scholar with the keywords "digital literacy, learning model". The third step involved creating criteria that were used as a guide to assess whether the data obtained could be used in the study. The criteria used included relevant national articles on the application of learning models to improve digital literacy skills, the

time period of the last five years (2020-2024), the source of the articles from Google Scholar, Sinta, Proceedings or national seminars and the use of Indonesian language. The fourth step was data selection based on predetermined inclusion and exclusion criteria. From this process, researchers obtained 5 articles that met the requirements. The fifth step is processing the data, the researcher will conduct a review stage and review the article in detail in the research results section. The sixth step compares several articles. The last step is making conclusions.

3). RESULTS AND DISCUSSION

Based on the evaluation conducted by researchers on journal articles, information was found on the effectiveness of learning models to improve digital literacy skills, which is then shown in table 1.

Table 1. Article Search Results

Number	Author and Year	Article Title	Results
1.	(Faridah et al., 2022)	Effectiveness of Project Based Learning Model on Numeracy Literacy and Digital Literacy of Madrasah Ibtidaiyah Students	Based on the results of the study, it was found that the use of the PjBL (Project-based Learning) learning model was effective in improving the numeracy literacy and digital literacy skills of fifth grade students of MI Al-Fithrah Surabaya. With the acquisition of a significance value of 0.107≤0.05, the results show that there is a significant effect of the independent variable (x) on all dependent variables. (Y_1, Y_2).
2.	(Hikmah et al., 2024)	The Effectiveness of the Application of the Flipped Crassroom Learning Model on Creative Thinking Skills, Digital Literacy and Student Learning Outcomes of the Accounting Department of the State Islamic	The results showed that the lantern-based flipped classroom learning model was effective in improving students' digital literacy skills. This can be seen in the average pre-test measured before learning the flipped classroom model of 58.47%. Then after being given learning by implementing a flipped classroom, the average digital literacy skills of

		University of Alauddin Makassar	69.40% which means there is an average increase of 10.93%.
3.	(Fitrianti, 2023)	Improving Digital Literacy Skills Through Problem Based Learning in Grade V Social Studies Learning at SDN Buukerto 03 Batu	The results showed that the Problem Based Learning model can improve students' digital literacy skills. Judging from the results in cycle I, the average digital literacy ability was 43.75% which is in the low category. In cycle II, there was an increase in the average score on digital literacy skills, namely by 69%.
4.	(Machfiroh et al., 2020)	Development of Problem Based Learning Tools to Improve Digital Literacy and Critical Thinking Skills of Grade V Elementary School Students	The results showed that the Problem Based Learning model can improve digital literacy skills. This can be seen from the average value of the pre-test is 74. S Furthermore, the results of the posttest scores get an average value of 89.
5.	(Effrisanti, 2023)	The LOC-R Learning Model to Improve Digital Literacy Skills	The LOK-R learning model is effective for improving digital literacy skills among Indonesian students who are at an intermediate level, namely $45 - 70\%$.

The research results presented in the table above show that several learning models have been effectively applied to improve students' digital literacy skills at various levels of education. Learning models such as Project Based Learning (PjBL), flipped classroom, Problem Based Learning (PBL) and LOK-R have yielded positive results, proving that innovation in teaching methods can be a powerful tool in developing digital literacy.

The first study revealed that the implementation of PjBL not only focuses on improving digital literacy skills, but also has a positive impact on numeracy literacy, especially among MI students. The

significance value of 0.107≤0.05 indicates that PjBL has a statistically significant effect in this context. PjBL engages students in real-world projects that require the utilization of digital technology, so that students can develop their digital literacy skills through practical and applicable experiences. This learner-centered project-based learning model will make students more active and creative (Kartini & Aljamaliah, 2024; Elva Diana, 2024).

Furthermore, the second study showed that the flipped classroom model provided an average increase of 10.93% in digital literacy among university students. The flipped classroom model has been defined by researchers to have the core idea of focusing on student learning at home and saving time for classroom activities (Lestari et al., 2024). The flipped classroom, which emphasizes self-directed learning through online materials before face-to-face classes, allows students to interact more with digital technologies, strengthening their ability to access, evaluate and use digital information effectively. This shows that the flipped classroom not only changes classroom dynamics but also significantly improves students' digital literacy.

The third and fourth studies evaluating the implementation of PBL also showed significant improvements in digital literacy skills. The increase from 43.75% to 69% and from 74 to 89 shows that PBL, which encourages students to solve real-world problems through a collaborative and investigation-based process, is very effective in improving students' digital skills. With Problem Based Learning (PBL) students are trained to compile their own knowledge, develop problem-solving skills, and learn how to solve problems (Novianti et al., 2020). PBL allows students to interact with a variety of digital tools and information sources, strengthening their ability to navigate complex digital environments.

Finally, the fifth study that examined the effectiveness of the LOK-R learning model showed mixed results, with a moderate level of digital literacy improvement of 45-70%. The LOK-R model is one of the problem-based learning models applied in literacy-based learning to improve literacy skills, critical thinking skills, problem solving skills and decision/conclusion making skills (Tuasamu et al., 2024). This confirms that LOK-R can be an effective alternative learning model in the context of developing digital literacy and 21st century skills.

Overall, the results of this study emphasize the importance of integrating innovative learning models into the curriculum to support digital literacy development. With the rapid development of digital technology, digital literacy skills are becoming increasingly important for students to adapt and

succeed in a changing world. Therefore, the use of learning models such as PjBL, flipped classroom, PBL, and LOK-R can be an effective strategy for educators to help students develop the skills needed in this digital era.

4). CONCLUSION

Based on the evaluation of journal articles, it was concluded that learning models such as Project Based Learning (PjBL), flipped classroom, and Problem Based Learning (PBL), LOK-R are effective in improving students' digital literacy skills at various levels of education. These models showed significant improvements in digital skills, with PjBL, flipped classroom and PBL, LOK-R each delivering positive and substantial results. The integration of these innovative learning models in the curriculum is an effective strategy to improve digital literacy skills among students.

REFERECES

Anggrasari, L. A. (2020). Penerapan E-Learning untuk Meningkatkan Kemampuan Literasi Digital di Era New Normal. *Premiere Educandum : Jurnal Pendidikan Dasar Dan Pembelajaran*, *10*(2), 248. https://doi.org/10.25273/pe.v10i2.7493

Effrisanti, E. (2023). Model Pembelajaran LOK-R Untuk Meningkatkan Kemampuan Literasi Digital. *Indonesion Journal of Action Research*, *2*(2), 167–175.

Elva Diana. (2024). Rendahnya Literasi Digital Peserta Didik pada Materi HOTS Pembelajaran Project Kreatif Kewirausahaan. *Jurnal Penelitian Pendidikan Indonesia (JPPI)*, *1*(3), 10–12. https://doi.org/10.62017/jppi.v1i3.937

Faisal, T. A., Hasanah, R. U., & Fatmawati, R. (2024). Systematic Literatur Review (SLR): Analisis Problematika Mahasiswa Pendidikan Matematika Pada Mata Kuliah Analisis Real. *Student Scientific …*, *2*(3), 42–51.

Faridah, N. R., Afifah, E. N., & Lailiyah, S. (2022). Efektivitas Model Pembelajaran Project Based Learning Terhadap Kemampuan Literasi Numerasi dan Literasi Digital Peserta Didik Madrasah Ibtidaiyah. *Jurnal Basicedu*, *6*(1), 709–716. https://doi.org/10.31004/basicedu.v6i1.2030

Fitrianti, N. A. F. (2023). *Peningkatan Kemampuan Literasi Digital Melalui Problem Based Learning dalam Pembelajaran IPS Kelas V di SDN Bulukerto 03 Batu*. *2*(3), 1348–1367.

Heryani, A., Pebriyanti, N., Rustini, T., & Wahyuningsih, Y. (2022). Peran Media Pembelajaran Berbasis Teknologi Dalam Meningkatkan Literasi Digital Pada Pembelajaran IPS di SD Kelas Tinggi. *Jurnal Pendidikan*, *31*(1), 17. https://doi.org/10.32585/jp.v31i1.1977

Hidayatullah, M. T., Asbari, M., Ibrahim, M. I., & Faidz, A. H. H. (2023). Urgensi Aplikasi Teknologi dalam Pendidikan di Indonesia. *Journal of Information Systems and Management (JISMA)*, *2*(6), 70–73. https://jisma.org/index.php/jisma/article/view/785

Hikmah, A., Arfandi, A., & Darmawang. (2024). *Efektivitas Penerapan Model Pembelajaran Flipped Crassroom Terhadap Keterampilan Berpikir Kreatif, Literasi Digital dan Hasil Belajar Mahasiswa Jurusan Akuntansi Universitas Islam Negeri Alauddin Makassar*. *8*(1), 90–105.

Jayantika, I. G. A. T., & Namur, G. (2022). Peran Teknologi Pembelajaran dalam Meningkatkan Literasi Digital Matematika. *Indonesian Journal of Educational Development*, *3*(2), 284–291. https://doi.org/10.5281/zenodo.7033331

Kartini, D., & Aljamaliah, S. N. M. (2024). Implementasi Literasi Sains untuk Menumbuhkan Karakter Peduli Lingkungan Menggunakan Model PjBL di SD. *Jurnal Riset Pendidikan Dasar (JRPD)*, *5*(1), 83. https://doi.org/10.30595/jrpd.v5i1.17583

Lestari, I. R., Anifah, L., Putu, I. G., & Buditjahjanto, A. (2024). *Penerapan Modul Ajar dalam Model Pembelajaran Flipped Classroom untuk meningkatkan Literasi Digital Siswa Sekolah Menengah Kejuruan*. *7*(1), 380–388.

Machfiroh, N., Mustaji, & Harmanto. (2020). Pengembangan Perangkat Problem Based Learning Untuk Meningkatkan Kemampuan Literasi Digital dan Berpikir Kritis Siswa Kelas V Sekolah Dasar. *Jurnal Education And Development*, *8*(4), 623–629.

Maritsa, A., Hanifah Salsabila, U., Wafiq, M., Rahma Anindya, P., & Azhar Ma'shum, M. (2021). Pengaruh Teknologi Dalam Dunia Pendidikan. *Al-Mutharahah: Jurnal Penelitian Dan Kajian Sosial Keagamaan*, *18*(2), 91–100. https://doi.org/10.46781/al-mutharahah.v18i2.303

Munti, N. Y. S. Y. S., & Syaifuddin, D. A. (2020). Analisa Dampak Perkembangan Teknologi Informasi Dan Komunikasi Dalam Bidang Pendidikan. *Jurnal Pendidikan Tambusai*, *4*(2), 1799–1805.

Naufal, H. A. (2021). Literasi Digital. *Perspektif*, *1*(2), 195–202. https://doi.org/10.53947/perspekt.v1i2.32

Novianti, A., Bentri, A., & Zikri, A. (2020). Pengaruh Penerapan Model Problem Based Learning (PBL) Terhadap Aktivitas Dan Hasil Belajar Siswa Pada Pembelajaran Tematik Terpadu Di Sekolah Dasar. *Jurnal Basicedu*, *4*(1), 194–202. https://doi.org/10.31004/basicedu.v4i1.323

Panjaitan, N., Ananda, R., & Delzy Perkasa, R. (2024). Pengaruh Literasi Digital Pada Pembelajaran IPS Terhadap Kemampuan Berpikir Kritis Siswa Kelas VIII Di SMP Muhammadiyah 22 Kisaran. *Mimbar Kampus: Jurnal Pendidikan Dan Agama Islam*, *23*(1), 74–89. https://doi.org/10.47467/mk.v23i1.3423

Prasutri, D. R., Muzaqi, A. F., Purwati, A., Nanda Choirun, N., Dan, & Susilo, H. (2019). Penerapan Model Pembelajaran Problem Based Learning (PBL) Untuk Meningkatkan Literasi Digital Dan Keterampilan Kolaboratif Siswa Sma Pada Pembelajaran Biologi. *Prosiding Seminar*

Nasional Dan Workshop Biologi-IPA Dan Pembelajarannya Ke-4.

Rahmasiwi, D. S., Dewi, C., & Prasasti, P. A. T. (2023). Pengaruh Model Pembelajaran Blended Learning Terhadap Kemampuan Literasi Digital Siswa Kelas V Sekolah Dasar. *Jurnal Riset Pendidikan Dasar (JRPD)*, *4*(1), 51. https://doi.org/10.30595/jrpd.v4i1.14383

Sari, I. N., Sunismi, & Zauri, A. S. (2024). Pengembangan Perangkat Pembelajaran Model Think Talk Write Berbasis Literasi Digital Materi Statistika Kelas VIII SMP/Mts. *JP3*, *19*(3), 1–11.

Septia, T., & Wahyu, R. (2023). Literasi Digital Peserta Didik Dalam Pembelajaran Geometri Terintegrasi Geogebra. *Plusminus: Jurnal Pendidikan Matematika*, *3*(1), 51–60. https://doi.org/10.31980/plusminus.v3i1.1222

Suardipa, I. P., & Primayana, K. H. (2020). Peran Desain Evaluasi Pembelajaran untuk Meningkatkan Kualitas Pembelajaran. *Widyacarya*, *4*(2), 88–100. http://jurnal.stahnmpukuturan.ac.id/index.php/widyacarya/article/view/796

Syah, R., Darmawan, D., & Purnawan, A. (2019). Analisis Faktor yang Mempengaruhi Kemampuan Literasi Digital. *Jurnal AKRAB*, *10*(2), 60–69. https://doi.org/10.51495/jurnalakrab.v10i2.290

Tuasamu, Y., Yati Lessy, S., Hulopi, F., & Darwin. (2024). Penerapan Model Pembelajaran Literasi Orientasi Kolaborasi dan Refleksi (LOK-R) Terhadap Kemampuan Liteasi Sains Pada Materi Fotosintesis Siswa Kelas VIII SMP Negeri 21 Maluku Tengah. *Jurnal Ilmiah Multidisiplin*, *2*(1), 2024. https://doi.org/10.5281/zenodo.10633479

Yanuarto, W. N., Jaelani, A., & Purwanto, J. (2021). Flipped Classroom Model: Empowering Digital Literacy for Mathematics Learning in Society 5.0. *Indonesian Journal of Science and Mathematics Education*, *4*(2), 158–171. https://doi.org/10.24042/ijsme.v4i2.9638