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Academic Achievement and Digital Literacy: A Correlational Study of Student (Prospective Chemistry Teachers) in Universitas Kristen Indonesia

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

The purpose of this study was to measure the effect of digital literacy on student learning achievement in chemistry. Digital literacy is the ability to search for information, process it, and make decisions based on the knowledge gained. The current high level of digital literacy has not been able to improve the quality of human life. The study used a correlational method to measure the relationship between digital literacy and student learning achievement. In this research, the measurement of digital literacy focuses on social networking skills, creating content, and organizing and sharing content. The results showed that digital literacy did not affect learning achievement (sig.>0.05). Students who have well digital literacy skills do not necessarily have an impact on student learning achievement. Although digital literacy does not directly affect students, those with

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good digital literacy are likely to have good knowledge. Many factors influence digital literacy, one of which is the ability to analyze, critical thinking skills, and others. Therefore, measuring digital literacy alone is not enough to have an impact on academic achievement.

Keywords: Academic achievement; chemistry; digital literacy; education; student; procpetive teachers; understanding chemistry.

1. INTRODUCTION

In the current context of education, digital literacy skills are becoming increasingly important, especially in today's rapidly developing digital information era. The ability to access, understand, and evaluate information quickly and effectively through text is becoming increasingly important, both in academic and professional settings. Therefore, it is important for prospective teachers to improve their digital literacy skills in order to better face the challenges of the academic and professional world.

Students with strong digital literacy skills can access a wider range of information resources and understand course materials more effectively, which in turn improves their academic performance (Nabila *et. al*., 2022). Similarly, strong digital literacy skills can also have a positive impact on technical, social-emotional, and cognitive dimensions (Watulak, 2016). However, students' digital literacy skills are often inadequate, especially among new students and those from backgrounds with limited reading and literacy skills (Reddy *et. al*.,2020). This limitation can lead to difficulties in understanding reading materials related to science, which in turn can negatively impact students' academic performance (Verhoeven *et. al*., 2024).

Digital literacy also encompasses critical thinking and problem-solving processes, in addition to skill-based competencies, including the ability to effectively solve problems in a technology-rich environment (Reddy *et. al*., 2020). These digital literacy skills include decoding text, participating in text interpretation, using text functionally, and critically analysing and transforming text. This result indicates that digital literacy encompasses several competencies, such as using technology to access information, and analysing and evaluating higher-order skills like evaluation, analysis, and synthesis (Nabila *et. al*., 2022). The research results show that students also exhibit a fairly strong influence of digital literacy on academic achievement, with a moderate effect (correlation coefficient around 0.466), which means that the higher the digital literacy, the better the academic performance (Saputra *et. al.*, 2024). A meta-analysis involving 4,105 students from 15 studies shows a moderate positive correlation between digital literacy and academic achievement with a combined correlation value of about 0.31, suggesting that better digital literacy skills contribute to better academic outcomes (Hardiani, *et. al.*, 2023).

In addition to its direct impact on academic performance, high digital literacy skills also provide long-term benefits for students. Students with high reading literacy skills tend to have higher self-confidence in understanding course material, better critical thinking skills, and analytical abilities. Furthermore, good digital literacy skills can help students explore the digital world, enabling them to seek out more complex topics in science and areas related to their field in the digital realm to enhance their capabilities. Students with high reading and digital literacy skills will be able to use digital/internet as a means to enhance creativity and innovation to support 21st-century life skills.

2. MATERIAL AND METHODS

2.1 Time and Place of Research

This research was conducted at the Universitas Kristen Indonesia, Department of Chemistry Education, Faculty of Teacher Training and Education. This research will be conducted at the beginning of the 2023 academic year.

2.2 Population and Sample

The sample used in this study consists of all Chemistry Education students (prospective teachers) at the Faculty of Teacher Training and Education (FKIP), Universitas Kristen Indonesia (UKI), from the 2022 cohort to the 2019 cohort. The sample used included all students, a total population of 20 students majoring in Chemistry Education, FKIP, UKI from the 2019 to 2022 cohorts.

2.3 Research Methodology

The methodology used in this study is the correlational method. The correlational research method is used to test the influence of students' digital literacy skills on their academic performance (in the category of understanding) in chemistry or prospective chemistry teachers.

2.4 Research Design

This research was conducted using a quantitative approach with a correlational study/research design. The data obtained from this research will be used to measure correlation of digital literacy skills to the academic performance of Chemistry Education students at FKIP UKI or prospective chemistry teachers. The variables in this study are digital literacy, which is the independent variable, and academic achievement which is the dependent variable. In this research, the measurement of digital literacy focuses on social networking skills, creating content, and organizing and sharing content (referring to the research Nugraha (2022)). These three aspects are integral components of the digital literacy instrument. These aspects are what are measured as digital literacy skills.

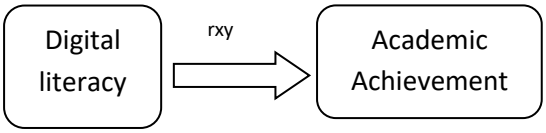

Fig. 1. Research Design

2.5 Research Instruments

This study uses test instruments and non-test instruments to answer the research questions, including:

1. Test instruments to assess students' academic performance or their ability to understand basic chemistry 1 and basic chemistry 2.
2. Non-test instruments, namely digital literacy questionnaires/surveys to assess students' digital literacy skills.
3. This study also collects data on other factors that may influence students' chemistry learning performance (such as educational background, motivation, and learning habits), structured interviews (in the form of checklists) to record control variables such as study time, the amount of material studied, and the duration of social media or digital media use (e.g., WhatsApp, Facebook, Instagram, etc.),
4. Observations (secondary data) were conducted to obtain information about other variables that may influence students' chemistry learning achievements, such as the difficulty level of the chemistry course or the teaching methods used by lecturers.

3. RESULTS AND DISCUSSION

Digital literacy is the ability to access, understand, use, evaluate, and create information from various digital sources by utilising information and communication technology devices wisely and responsibly. According to Naufal (2021), digital literacy is defined as the ability to obtain, understand, and use information from various sources in digital form. Digital literacy plays an important role in the development of knowledge and creativity, especially in the world of education, which is increasingly connected to technology.

According to Nasrullah et al*.* (2017), digital literacy is the ability and skill to manage digital media, digital tools, or networks to find, evaluate, create, and utilise information responsibly in daily life. Digital literacy also includes the ability to use technology wisely and understand its impact on oneself and others (Manubey *et. al.*, 2022). Digital literacy is an asset for students to obtain information in support of their academic achievement.

Academic achievement is the result achieved by students (prospective teacher) as a measure of success in the learning process, typically expressed in the form of grades, numbers, letters, or symbols reflecting mastery of specific subject matter and skills (Syafii *et. al.*, 2018). Academic achievement encompasses three main aspects: cognitive (knowledge), affective (attitude, interest), and psychomotor (skills) (Jeslin and Putra, 2019). In the realm of learning, academic achievement can refer to the concept of understanding. Students (prospective teacher) with high comprehension skills will also have pleasure learning achievements (Mahrawi et al*.,* 2023).

In improving learning achievements, many factors influence, one of which is digital literacy. Digital literacy is the ability of students (prospective teacher) to recognise and access information, validate it, and understand it well.

Digital literacy has a positive impact on students' learning achievements. Students with high digital literacy tend to have better academic performance because they are able to utilise digital technology to understand materials, complete assignments, and communicate effectively (Sugiantoro, 2024).

Digital literacy enhances critical thinking, analysis, communication, and collaboration skills through the use of technology, which directly impacts academic achievement (Saputra *et. al.*, 2024). Quantitative research shows that digital literacy can contribute up to approximately 27% to 32% to variations in student (prospective teacher) and university student (prospective teacher) learning achievements, with the remainder influenced by other factors such as school infrastructure and socio-economic conditions (Yudha *et. al.,* 2023). The aspects of digital literacy that play a role include information competence, communication, content creation, and digital security. Mastering these aspects helps students access information quickly, learn more efficiently, and make better learning decisions (Antoro *et. al.,* 2021). Challenges such as limited technological infrastructure, insufficient teacher training, and low parental awareness remain obstacles in optimising digital literacy for academic achievement (Wulandari *et. al.,* 2022).

In this research, the measurement of digital literacy focuses on social networking skills, creating content, and organizing and sharing content. These three aspects are integral components of the digital literacy instrument. These aspects are what are measured as digital literacy skills.

Research conducted to measure digital literacy and the academic performance of Chemistry Education students at the Faculty of Teacher Training and Education found that the average digital literacy score of students (prospective teachers) was 60.9, which is considered good. The sample used in this study consisted of 20 students from several batches. The results of learning achievement measurements were based on three parameters, namely basic chemistry 1, basic chemistry 2, and GPA. The results of learning achievement showed the following scores:

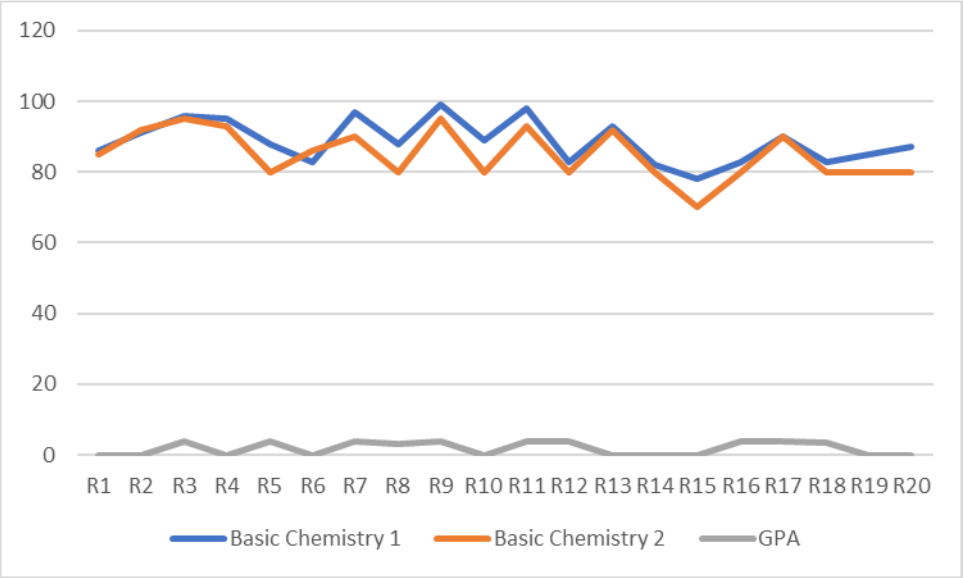

Fig. 2. Basic chemistry 1, basic chemistry 2, and GPA scores

From the diagram above, it can be seen that there is a variety of scores for Basic Chemistry 1, Basic Chemistry 2, and GPA. Students who have high scores in Basic Chemistry 1 and Basic Chemistry 2 will also have high GPA scores, for example in samples R3, R7, and R9. The average score for Basic Chemistry 1 is 88.7, while the average score for Basic Chemistry 2 is 85.05, both categorized as good. Additionally, the average GPA of students is 3.76. Therefore, students with high scores in Basic Chemistry 1 and Basic Chemistry 2 will also have a high GPA.

The distribution pattern of students' digital literacy skills can be seen in the following graph:

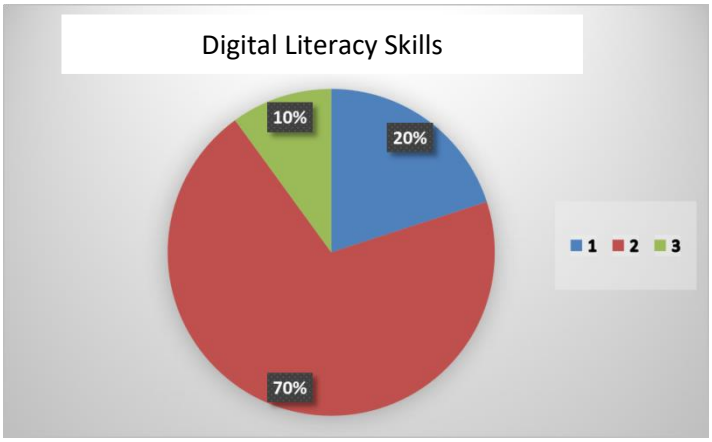

Fig. 3. Digital literacy ability circle diagram

Table 1. Result digital literacy questioneries

No.	Using Aplication	(%)	Duration	(%)	Using email	(%)	Using Learning Management System (LMS)	(%)
1	power point and video	8	3-5 hours	2	rare	10	Rare	10
2	Animation video	12	5-10 hours	78	quite often	30	quite often	30
3	power point, animation video, aplication, and *learning management system*	80	>10 hours	20	often and very often	60	often and very often	60

The graph shows that 20% of students have good enough digital literacy skills, while 10% have fairly good digital literacy skills, and 70% have very good digital literacy skills. Digital literacy skills is well among the current generation, Gen Z, indicate that students are already accustomed to technology. From a young age, Indonesian children are already familiar with the use of technology, particularly gadgets or smartphones. This familiarity begins as early as three years old, making Indonesian children proficient in using gadgets (Ramadhani et al*.,* 2024). According to data from the Central Statistics Agency (BPS) in 2022, nearly half of young children in Indonesia have used smartphones or gadgets. Specifically, 33.44% of young children use mobile phones, and 24.96% can access the internet. Children aged 5–6 years have a higher usage rate (52.76%) compared to infants aged 0–4 years (25.5%) (Rahayu *et. al.*, 2021). Gadget usage among school-aged children is also very high, with many children using gadgets for gaming, watching in entertainment, and learning through educational apps (Mariyama *et. al.*, 2021).

Data obtained from the sample indicates that the majority of students have well skills in using gadgets, with 80% of students able to use PowerPoint, video animations, applications, and learning management systems. The majority of students use gadgets for 5–10 hours per day, accounting for 78% of respondents (see Table 1). This significant potential greatly supports students' digital literacy skills. Additionally, in teaching, lecturers use email (60%), learning management systems (80%), and a variety of gadgets, including smartphones, laptops, and tablets (70%) (see Table 1).

Frequent and proper use of gadgets in learning or daily activities will have a positive impact on digital literacy skills. Digital literacy skills will have a positive impact on learning outcomes, namely a high Academic Achievement Index. However, the reality is that statistical test results on students show the opposite. The normality test results show normal values (sig. > 0.05) (see Table 2)

Table 2. Normality test

One-Sample Kolmogorov-Smirnov Test			
		Learning Achviement	**Digital Literacy Skills**
N		20	20
Normal Parameters[a,b]	Mean	8,3000	60,9000
	Std. Deviation	1,26074	8,07139
Most Extreme Differences	Absolute	,261	,106
	Positive	,239	,106
	Negative	-,261	-,070
Test Statistic		,261	,106
Asymp. Sig. (2-tailed)		,100[c]	,200[c,d]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

Table 3. Hypothesis testing, (a) Model summary, (b) Coefficients[a]

(a) Model Summary				
A	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	,158[a]	,025	-,029	8,18805

a. Predictors: (Constant), Learning Achievement

(b) Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	52,490	12,502		4,199	,001
	Learning Achievement	1,013	1,490	,158	,680	,505

a. Dependent Variable: Nilai Literasi Digital

After the normality test, a statistical hypothesis test was conducted using a simple linear regression test to examine the effect of digital literacy skills on academic achievement. The results showed that digital literacy skills did not affect the academic achievement of chemistry education students (sig.>0.05). The regression test results also showed that the regression coefficient of the digital literacy variable (x) on the academic achievement variable (y) was only 2.5% (see Table 3).

Digital literacy is the ability to find information, validate it, and manage it into knowledge (Ardhiani *et. al.*, 2023). These three things are components of digital literacy, so it is not just about being able to find information, but also having the ability to validate that information based on its source, as well as managing the information obtained properly. In addition, the content being searched for must be supportive of learning. Is the content being searched for educational content related to chemistry learning? Based on data from respondents, it was found that the majority of students use gadgets for entertainment and education. Social media applications are the most accessed by students besides YouTube. Based on the data obtained, social media such as TikTok and Instagram are the most widely used applications.

The results of the regression analysis indicate that the level of digital literacy among students does not have a significant influence on the improvement or decline in academic performance. Students tend to only be able to find and copy information from the internet without processing or evaluating it. Additionally, learning discipline is a more dominant factor influencing academic performance than digital literacy (Salma & Siwi, 2023). Research by Aisyah and Dewi (2022): This study also found that there is no significant influence between digital literacy and academic performance. This indicates that improving digital literacy alone does not automatically improve students' academic achievement (Soraya *et. al.*, 2023). Based on the results of research by Nurhaliza et al. (2024), the relationship between digital literacy and academic achievement is not always

significant. There are students with low digital literacy but high achievement, and vice versa. Other factors also influence achievement.

Digital literacy is limited to the ability to search for and copy information. In practice, many students are only able to find and copy information from the internet without truly understanding, processing, and critically evaluating that information. As a result, even though they are digitally literate, the skills needed to improve learning outcomes, such as critical thinking and analysis, do not develop optimally. In some schools, the aspect that more significantly influences students' grades is discipline in completing assignments, not how proficient they are in digital literacy. This results in differences in digital literacy levels among students not contributing meaningfully to academic performance (Salma & Siwi, 2023). Students often use technology for purposes unrelated to learning (e.g., entertainment or social media), so their digital literacy does not directly correlate with improved academic outcomes (Dewi, 2023). Students often use technology for purposes unrelated to learning (e.g., entertainment or social media), so their digital literacy does not directly correlate with improved academic outcomes (Zakaria, 2023).

Data obtained from respondents generated data, regarding the sources of reading materials used by students, the majority of information is obtained from social media platforms such as blogs. However, many of these blogs lack credibility and are not supported by scientific research, making it difficult to assess their scientific validity (see Fig. 4). Moreover, students tend to read online comics like manga and novels more frequently. The use of textbooks and scientific journals remains minimal.

The use of scientifically grounded reading materials is crucial to ensure the credibility and reliability of information. Such materials play a significant role in enhancing students' cognitive abilities and critical thinking skills, more so than non-scientific sources or those not based on research. Information lacking scientific foundation is highly susceptible to containing hoaxes. Hoax news significantly undermines reading literacy, which in turn affects knowledge levels and increases the risk of poor decision-making (Nabilah *et. al.*,2022). In developed countries, people exhibit strong reading habits, particularly by engaging with credible sources such as books, journals, and verified information. As a result, individuals in these societies tend to have strong critical thinking abilities and are better equipped to make informed decisions, as they are accustomed to verifying the accuracy of the information they receive (Verhoeven et al*.*, 2024).

In addition, observations of students and lecturers revealed that not all lecturers use learning management systems, email, or online information searches in their teaching. Many lecturers focus solely on the use of PowerPoint. Not all lecturers provide clear guidance on the use of technology to support learning.

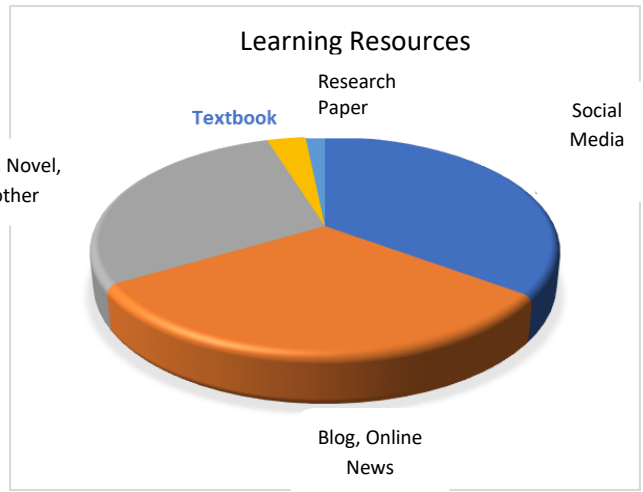

Fig. 4. Learning resources

In addition, some lecturers place more emphasis on discipline in collecting assignments than on students' digital literacy skills, so that the impact of digital literacy on academic achievement is small (Dewi *et. al.*, 2024). The mismatch between teaching methods and the use of digital technology, as well as the lack of teacher training in integrating technology into learning, can hinder the optimal utilisation of digital literacy (Khasanah & Yushita, 2023). Many students simply copy information from the internet without evaluating the quality and relevance of the sources, so digital literacy does not develop to the stage of information processing that can enhance learning outcomes (Rini *et. al.*, 2022).

Based on the research findings outlined above, digital literacy is well does not necessarily influence academic performance. Many factors influence academic performance, including learning motivation, learning resources, teaching methods and media used, and others. However, in addition to good digital literacy, the scientific content studied in the digital world also influences academic achievement. Unfortunately, high gadget usage has not been able to influence student learning achievement.

4. CONCLUSION

Digital literacy is the ability to search for, validate, and manage information. High digital literacy skills will affect learning achievement, but research results show different results. Digital literacy skills do not affect learning achievement. Many factors affect learning achievement, but the most important thing is whether the gadgets used are oriented towards supporting learning. The results of this study indicate that students with high digital literacy skills do not influence academic performance (p-value > 0.05). High digital literacy skills still do not influence performance because many factors affect performance, one of which is the content being studied and the depth of understanding of the material being studied. Therefore, digital literacy skills alone are insufficient to influence students' academic performance. The recommendation for this study is that further research is needed to obtain more in-depth data and use a larger and more extensive sample.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc have been used during writing or editing of this manuscript. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology.

Details of the AI usage are given below:

1. Consensus for literature
2. Preplexity for literature

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COMPETING INTERESTS

Author has declared that they have no known competing financial interests or non-financial interests or personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES

Aisyah, S., & Dewi, R. M. (2022). The Influence of Economic Literacy and Digital Literacy on Learning Achievement in Economics Subject for Grade X-E3 Students of SMA Negeri 3 Sidoarjo During the Covid-19 Pandemic. Jurnal Pendidikan Ekonomi (JUPE), 10(2), 139–147. https://doi.org/10.26740/jupe.v10n2.p139-147

Antoro, B., Boeriswati, E., & Leiliyanti, E. (2021). The relationship between literacy activities and student achievement at SMP Negeri 107 Jakarta. *Journal of Education and Culture, 6*(2). https://doi.org/10.24832/jpnk.v6i2.2394

Ardhiani, O., Hadjam, M. N. R., & Fitriani, D. R. (2023). Digital literacy and student academic performance in universities: A meta-analysis. *Journal of Phycology and Instruction, 7*(3). https://ejournal.undiksha.ac.id/index.php/JoPaI/article/view/68191/27630

Dewi, L. E., Syofyan, R., & Putra, D. G. (2024). The influence of digital literacy and learning motivation on student learning outcomes. *Jurnal Ecogen, 7*(2). http://dx.doi.org/10.24036/jmpe.v7i2.16028

Dewi, P. A. C. (2023). Literacy impact and challenges of digitalisation for school-age children. *SELAPARANG: Jurnal Pengabdian Masyarakat Berkemajuan, 7*(2). https://journal.ummat.ac.id/index.php/jpmb/article/viewFile/15035/7142

Jeslin, S., & Putra, A. I. D. (2019). Learning achievement as reviewed from discipline of students at Setia Budi Abadi College, Perbaungan. *Journal of Education, Humanities, and Social Science, 2*(1), 24–35. https://mahesainstitute.web.id/ojs2/index.php/jehss/article/view/48/pdf

Khasanah, D. N., & Yushita, A. N. (2023). The influence of digital literacy, learning independence, and parent's attention on learning achievement in basic accounting. *Jurnal Pendidikan Akuntansi Indonesia, 21*(1). https://doi.org/10.21831/jpai.v21i1.44398

Mahrawi, M., Wahyuni, I., Ratnsari, D., Rifqiawati, I., & Istiana, Y. (2023). The development of Rubi Web (Rumah Biologi Web) in biodiversity concept. *Biosfer: Jurnal Pendidikan Biologi, 16*(2). https://doi.org/10.21009/biosferjpb.28734

Manubey, J., Koroh, T. D., Dethan, Y. D., & Banathuan, M. F. (2022). The effect of digital literacy on learning outcomes. *Edukatif: Jurnal Ilmu Pendidikan, 4*(3). https://doi.org/10.31004/edukatif.v4i3.2590

Mariyama, I. P., Lestari, I. P., & Sari, I. P. (2021). The effect of intensity and type of gadget use on emotional levels in school-age children. *Indonesian Journal of Nursing and Health Sciences, 4*(2). https://paperity.org/p/322237045/pengaruh-intensitas-dan-jenis-pemakaian-dalam-penggunaan-gadget-terhadap-tingkat

Nabila, S., Manalu S. R., & Santaosa, H. P. (2022). The relationship between digital literacy competency level and social media consumption intensity with the millennial generation's susceptibility to believing false information about COVID-19. *Online Interaction, 11*(1). https://ejournal3.undip.ac.id/index.php/interaksi-online/article/view/36984

Naufal, H. A. (2021). Digital literacy. *Journal Perspective, 1*(2). https://doi.org/10.53947/perspekt.v1i2.32

Nasrullah, R., Aditya, W., Satya, T. I., Nento, M. N., Hanifah, N., Miftahussururi, & Akbari, Q. S. (2017). Supporting Materials for Digital Literacy: National Literacy Movement. In Ministry of Education and Culture. https://gln.kemdikbud.go.id/glnsite/wp-content/uploads/2017/10/cover materi-pendukung-literasi-finansial-gabung.pdf

Nugraha, D. (2022). Digital literacy and literature learning related to digital literacy at the elementary school level. *Jurnal Basicedu, 6*(6). https://doi.org/10.31004/basicedu.v6i6.3318

Nurhaliza, A., Karolina, V., Achmadi, & Rahmatika, I. (2024). The relationship between digital literacy and academic achievement of social studies education students at Tanjungpura University, Pontianak. *Wahana Pendidikan Scientific Journal, 10*(16), 662–671. https://doi.org/10.5281/zenodo.13765003

Rahayu, N. S., & Elan, S. M. (2021). Analysis of gadget use in early childhood. *Agapedia PAUD Journal, 5*(2), 202–210. https://doi.org/10.17509/jpa.v5i2.40743

Ramadhani, A., Wardani, S. F., & Samsiar. (2024). Utilizing gadgets as digital technology as a strategy to enhance early childhood language potential. *Journal on Teacher Education, 3*(2), 38–46. https://doi.org/10.31004/jote.v5i3.26083

Reddy, P., Sharma B., & Chaudhary, K. (2020). Digital literacy: A review of literature. *International Journal of Technoethics (IJT)*, 65–94. https://doi.org/10.4018/IJT.20200701.oa1

Rini, R., Suryadinata, N., & Efendi, U. (2022). Student digital literacy and influencing factors. *Jurnal Akuntabilitas Manajemen Pendidikan, 10*(2). https://doi.org/10.21831/jamp.v10i2.48774

Salma, L., & Siwi, M. K. (2023). The influence of digital literacy and student learning discipline on student achievement in online learning during the COVID-19 pandemic in economics subjects for grades X, XI, and XII Social Studies at State Islamic Senior High School 4 Agam. *Jurnal Salingka Nagari, 2*(1), 12–23. https://doi.org/10.24036/jsn.v2i1.80

Saputra, I. A., Ramadhani, A., Khaerunnisa, M. Z., & Ainiyah, N. (2024). The influence of digital literacy on academic achievement of senior high school students. *Journal of Educational Sciences and Learning, 3*(1), 25–31. https://doi.org/10.58706/jipp.v3n1.p25-31

Soraya, S. M., Kurjono, & Purnamasari, I. (2023). The influence of students' digital literacy on

student learning outcomes with learning motivation as a moderating variable. *Jurnal Educatio, 9*(2), 681–687. https://doi.org/10.31949/educatio.v9i2.4537

Sugiantoro, M. (2024). The influence of digital literacy on student learning achievement in the learning evaluation course at Panca Sakti University, Bekasi. *Jurnal Pendidikan Generasi Nusantara, 2*(2), 312–317. https://doi.org/10.61787/n0ssst90

Syafii, A., Marfiyanto, T., & Rodiyah, S. K. (2018). A study of student learning achievement in various aspects and influencing factors. *Jurnal Komunikasi Pendidikan, 2*(2). https://doi.org/10.32585/jkp.v2i2.114

Verhoeven, L., S. Nag, C. Perfeti, & K. Pugh. (2024). *Global variation in literacy development*. Cambridge University Press. https://doi.org/10.1017/9781009242585

Watulak, S. L. (2016). Reflection in action: Using inquiry groups to explore critical digital literacy with pre-service teachers. *Educational Action Research, 24*(4), 503–518. https://doi.org/10.1080/09650792.2015.1106957

Wulandari, D., Khusaini, K., & Syamiya, E. N. (2022). Digital literacy as a determining factor of academic achievement. *Educational Articles, 6*(3). http://dx.doi.org/10.30998/sap.v6i3.11925

Yudha, D. K., & Irawan, D. K. (2023). The influence of digital literacy on student achievement at Pusaka Bangsa Karawang Junior High School. *Scientific Journal of Information Management and Communication, 7*(1). https://doi.org/10.56873/jimik.v7i1.261

Zakaria, A. R. (2023). The effect of digital literacy on learning outcomes with emotional intelligence as a mediating variable for students. *Edunomia: Jurnal Ilmiah Pendidikan Ekonomi, 4*(1). https://doi.org/10.24127/edunomia.v4i1.4878

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