



The Digital Literacy Instruments for University Students

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ABSTRAK

Diera digital saat ini untuk memperoleh informasi sangat mudah namun kenyataannya kemampuan berpikir kritis mahasiswa masih kurang dan tingkat plagiasi masih cukup tinggi. Hal ini bisa diatasi jika mahasiswa memiliki kemampuan literasi digital. Tujuan dari penelitian ini menciptakan instrument literasi digital pada mahasiswa. Metode yang digunakan adalah R&D (Research and Development) dengan model RDR (Research, Development, Research). Subjek penelitian ini adalah 2 orang dosen yang ahli di bidangnya, dan menggunakan 30 mahasiswa subjek uji coba. Metode pengumpulan data menggunakan kuesioner dan wawancara. Teknik analisis data menggunakan analisis kuantitatif dengan teknik korelasi product moment. Hasil dari penelitian menunjukkan bahwa koefisien validitas isi instrumen penilaian literasi digital pada mahasiswa sebesar 1,00 yang berarti validitas sangat tinggi. Berdasarkan hasil perhitungan uji reliabilitas diperoleh nilai r_{11} sebesar 0,88 yang diartikan bahwa instrumen ini reliabel karena nilai koefisien reliabilitas yang diperoleh lebih besar dari 0,60. Kesimpulannya instrumen literasi digital dapat digunakan untuk mengevaluasi kemampuan literasi digital mahasiswa. Implikasi penggunaan instrumen literasi digital dapat membantu mahasiswa untuk meningkatkan kualitas proses pembelajaran.

ABSTRACT

Nowadays in the digital era, obtaining information is a very easy task, however, critical thinking from many university students in reality are still lacking and they have a high plagiarism level. This problem can be solved if the students have a digital literacy ability. The purpose of this research is creating a digital literacy instrument for students. The method applied in this research was R&D (Research and Development) research method with RDR (Research, Development, and Research) model. Subject of this study were two (2) expert lecturers in their field and collaborated with 30 students as test subjects. The method of data collection was questionnaires and interview, whereas the data analysis technique applied in this research was qualitative analysis with product moment correlation technique. The result of this research showed the content validity from the digital literacy coefficient of the students was 1, 00 which interpreted as a very high validity value. While the result of reliability test calculation showed r_{11} value was 0.88 which means the instrument is reliable since reliability coefficient value obtained a number greater than 0.60. Therefore, it can be concluded the digital literacy instrument from this research can be used to evaluate the students' digital literacy ability. The implication of digital literacy instrument usage hopefully can help students to improve the quality of their learning process.

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1. INTRODUCTION

Parallel to development and changes of era, attitude and human behaviour also have been changed from time to time. It also changes the course of education system development in the world and Indonesia in particular. These changes are apparent in many adjustments to educational system which consists of learning, teaching, curriculum, students' development, ways of learning, learning tools, infrastructures and from the graduate competencies from time to time (Bosica et al., 2021; Yustika & Iswati, 2020). There is also a major shift in the industrial sector of the fourth industrial revolution era where we can see the information technology together with communication are fully utilized in almost every line of human life, including in the education field. In relation to the world of education, literacy becomes an important part of student growth and student development since it is related to the students' role as an educational subject. In the past time, people were only presented by old literacy skills included reading, writing and arithmetic. Nowadays, people have to apply new literacy skill consisting of data, technology, and humanism (Muliani et al., 2021; Muliastri, 2019; Suryanti & Wijayanti, 2018). This new literacy has a direct contact to human abilities in reading, analysing and making conclusion based on data and information obtained, also must able to understand the ways of machine work, and has skills to communicate,

collaborate, perform critical thinking, also be creative and innovative. The task of current education world through its learning process not only emphasizing on strengthening the old literacy competencies, but simultaneously solidifying the new literacy to be integrated into robust competences in scientific fields and expertise or professions. These competencies are summarized into a digital literacy with eight important elements namely: Cultural, Cognitive, Constructive, Confident, Communicative, Creative, Critics, and Civic. Therefore, the digital technology has become an integral part of education (Benson & Kolsaker, 2015; Suryanti & Wijayanti, 2018). The digital technology mentioned in this study include a variety of computer hardware and software such as cellular phones, web tools, application software, communication and storage services (Mohammadyari & Singh, 2014; Tang & Chaw, 2016).

Digital literacy defines as an individual's awareness, attitude and ability to use digital tools and facilities in appropriate ways to identify, access, manage, integrate, evaluate, analyse, and synthesize digital resources, build new knowledge, communicate with others in order to participate effectively in society (Rahman et al., 2020; Restianty, 2018; Suwanto et al., 2022). By further explanation, the digital literacy is a technical skill in accessing, assembling, understanding and disseminating information which previously criticize the source (Ayupradani et al., 2021; Naufal, 2021; Shavab, 2020). Digital literacy demands individual to use technology through technical, cognitive and sociological skills in solving problems in today's digital era (Eshet-Alkalai, 2004; Kaeophanuek et al., 2018; Sánchez-Cruzado et al., 2021). In conclusion, the digital literacy is the ability to understand and use various forms of information from variety of sources accessed through information and communication technology by having social skill, learning ability, and having critical thinking, creative and inspirational attitudes.

Fast growth of digital equipment and access to information in digital form brings impact of opportunities but also challenges. There are several positive impacts can be listed such as speed access to information and entertainment, ease way to communicate and conduct business transactions as well as equal access to education and make easier to find necessary information. Conversely, the negative impacts should be aware of are not knowing or unaware how to use digital media with wise and responsible attitude and lacking of critical thinking skills (Amri et al., 2021; Fernanda et al., 2020). This critical thinking ability is essential for students in relation to obtaining and disseminating information when using digital technology (Chan et al., 2017; Maria, 2021). Students can use digital technology for learning activities like reading and sending email, accessing the learning management system, reading journals or e-book, taking online quizzes, participating in discussion forum, and others.

Utilization of technology is closely related to digital literacy skill which should be owned by students of today. Many students are accustomed to various digital devices usage, however, in reality, this ability is not guarantee those students own the ability for learning purposes (Sholihatin et al., 2021; Tohara, 2021; Winarsih & Furinawati, 2018). Although students are currently live in the digital era, they do not have a complete knowledge about digital literacy. It gets worse since the digital science literacy belongs to students of Surabaya College of Health Sciences still in low category. Not only the digital literacy of West Java students somewhat lacking in the category of seeking information from the right sources but also lacking of ability in comparing reliable information (Eryansyah et al., 2019; M. D. Kurnia, 2021). A minimum or less digital science literacy becomes a serious problem when student uses technology in their learning process but not aimed to the right target.

Based on result of interview with the expert lecturers, they said students are rely on copy paste activity while working on their assignment which visible when lecturers conducted a plagiarism check (Turnitin Test) and resulted above 50 % of the student work are plagiarism. As the observation result in this study, it was found the students use learning resources via internet in their learning process but they did not criticize these sources. Students only enter the keywords about information they were looking for and transfer the information to their worksheets. This learning attitude continues in the next teaching and learning activities where students do not show any enthusiasm as it proven during discussion activity (less student participation/ask question during the question and answer session). If there were student finally asked, their question still limited to C1 and C2 level of cognitive domain from Bloom's Taxonomy. Level C1 of Bloom's Taxonomy includes remembering activities while level C2 includes activities to understand (Arievitch, 2020; Nafiati, 2021). Moreover, students' ability in asking and answering questions is related to their literacy skill, whereas the assessment of students' digital literacy is not followed by the development of appropriate instrument, so, in other words, the assessment did not have or did not employ the suitable instrument for measuring the students' digital literacy capability. This weakness made the instrument being used in assessing the students' digital literacy capability did not have adequate validity and reliability values, and when this problem left unchecked then it will have a negative impact to the students' literacy skill.

One solution provided for this problem is developing digital literacy instruments for students. An instrument defines as a tool used to collect data in an assessment and an instrument is seen as good instrument when it able to provide assurance of findings being produced are valid and can be relied upon to provide an accurate and precise assessment of the respondent's ability (Darmana et al., 2021; Nisa et al., 2018). Therefore, an instrument plays essential role in research because the quality of data produced from the research is determined

by the quality of the instrument used/employed. A scientific literacy-authentic assessment instrument is valid, reliable, effective and have a high level of practicality. The digital literacy instrument for teacher by using the Rasch model is able to meet the requirements and can be used as material to measure the teachers' digital literacy skill at MAN Palembang City (Astuti et al., 2012; Lestari et al., 2022).

From previous research findings indicated a digital literacy can make a significant contribution to improve academic achievement. Literacy culture is crucial to improve students' skill (Huda et al., 2020; Wulandari et al., 2022). A Kahoot test technique together with the use of digital literacy media are effectively to be used in Indonesian language lectures even though the lectures were performed in relatively large classes. In line with this theory, there was a digital literacy by utilizing the Edlink application module in online lectures for students of Guidance and Counselling Study Program, PGRI Mahadewa University (Alfalah et al., 2022; Yuliastini & Kusumawardani, 2022). Based from the explanation, it can be concluded the assessment instrument plays a significant role in a learning process. Yet, there is no study regarding the development of digital literacy instruments for students. Thus, the purpose of this study is creating digital literacy instruments for students with expectation through this instrument, lecturers can create programs that are in accordance to the needs of utilizing digital-based learning resources for students. This research instrument is expected to be able to be used by lecturer as a reference in making instruments to simplify or make lecturers get easier in developing their creativity regarding digital literacy in particular.

2. METHOD

This research uses the development research method or known as R&D (Research and Development) research method where the development executed on the digital literacy instrument for students. The applied research model for this study was RDR model (Research, Development, Research) consisted of three (3) stages namely Research (preliminary study), Development (Development), and Research (Product Effectiveness Testing) (Anggreni et al., 2022; Azis et al., 2022). The subjects of this study involving two (2) lecturers and thirty (30) students from History Education Department, Social Sciences Faculty, Gorontalo State University. Data collection method was a qualitative approach by conducting interviews with respondents, meanwhile there was a quantitative approach also carried out by distributing questionnaires. There were two data analysis activities in this study: (a) data analysis from practitioners and experts and (b) data analysis during product trial by employing SPSS Version 27. The first research phase or preliminary study carried out for obtaining the initial information about the necessity, problem, field condition also the feasibility of digital literacy instruments for the students of Gorontalo State University, Faculty of Social Sciences, History Education Department, which conducted through an interview with the lecturers. Next, the development stage carried out by observing result analysis from the preliminary study. Development activity was performed by establishing a product of digital literacy instrument (for the students) as a form of completion. The main activity of this stage was designing a digital literacy instrument which includes arrangement of assessment outlines/grids, whereas the grid aspects within these digital literacy are to be develop through formulation of assessment indicators to achieve more specific result.

The initial result from instrument arrangements then consulted with expert lecturers to obtain further advice/input for the instruments. After the instrument be repaired or having improvement then the research process continued with the product effectiveness test stage. The final research stage or the product effectiveness test will be carried out after designing digital literacy instruments for students. The effectiveness test was held by involving two (2) expert lecturers to assess feasibility aspect of the developed instrument. The experts whom asked to provide an assessment of these instruments were two expert lecturers in their field. The content validity test from the experts is conducted by providing rating sheet filled by two measuring answers of relevant and irrelevant. After the instrument's assessment done, then, the validity and reliability analysis was carried out to determine feasibility level of the develop instrument (Tomczyk & Walker, 2021). The subject of the study was to construct digital literacy instruments for students at Gorontalo State University, Faculty of Social Sciences, Department of History Education, consisted of grids/outlines and questionnaire sheets. Data collection method of this study was questionnaire and interview with expert lecturers, and the digital literacy outlines will be presented in Table 1.

Table 1. The Grids of Digital Literacy Instruments

Aspect	Dimension	Indicator	Items
Digital Literacy	Problem Solving	To identify the needs from the use of digital resources	1,2,3
		To make the right decisions in using digital resources according to the goals/needs	4,5,6
		To use the technology in a creative way	7,8,9
	Digital Skills	Defines keywords to find the expected information	10,11,12

Aspect	Dimension	Indicator	Items
		Checking information in a critical way for accuracy before it will be used	13,14,15 16,17,18
		Integrates information which come from various sources	
	Digital Ethics	Understand about plagiarism	19,20,21
		Understand about ethic in using internet	22,23,24,
		Differentiate between fact and opinion	26,27,28

Testing for the research instrument was held to obtain an overview about whether the instrument is suitable for use or not. Terms or requirement for the instrument in this study were the validity test and reliability test of the instruments. Testing validity of the research instrument was conducted by using the two (2) expert judgments who are considered mastery the two research variables (Nurchikmah et al., 2022). Further, after statement items have been validated by the two experts then these items will be analysed by entering the result from expert test scores into a cross-tabulation formula as presented in Table 2.

Table 2. The Instrument of Content Validity Coefficient

Coefficient	Category
0.8-1	Very High Reliability
0.6-0.79	High Reliability
0.40-0.59	Moderate Reliability
0.20-0.39	Low Reliability
0.00-0.19	Very Low Reliability

This study employs a validity test to the instrument items by a product moment correlation technique. If the N trial groups > 30 respondents and it resulting interval data then product moment correlation formula can be used, also by another reason is due to the usage of Likert scale technique for the research instruments (Riyani et al., 2017). The criteria for instrument items to be declared as valid is achieved when the rxy count is greater than the rxy table (rxy count > rxy table) with a significance level of 5 %. Since the experts' assessment for the digital literacy instruments for student consists of two answer choices (relevant and irrelevant) then the reliability coefficient of the instrument is calculated by using the formula of Kuder Richardson 20 (KR-20). The classification from coefficient of reliability is presented in Table 3.

Table 3. Classification for Reliability Coefficients

Coefficient of Reliability	Interpretation
0.80 < r11 ≤ 1.00	Very High Reliability
0.60 < r11 ≤ 0.80	High Reliability
0.40 < r11 ≤ 0.60	Moderate Reliability
0.20 < r11 ≤ 0.40	Low Reliability
0.00 < r11 ≤ 0.20	Very Low Reliability

3. RESULT AND DISCUSSION

Result

The research is employing a RDR model because of the simplicity, systematic and clear stages characteristics from the RDR model. In the first stage (the research stage), a preliminary study was carried out for analysing related needs, field condition and curriculum to assure the obtained data for designing assessment instruments are according to the encountered problem. In the preliminary study, there was an interview conducted to lecturers regarding conditions in the research field. From the result of the interview, it is known that digital literacy instruments for students in the learning process are still using very simple instruments and these instruments are inappropriate for use to measure the students' digital literacy. Thus, based on this analysis, a digital literacy instrument was designed for students at Gorontalo State University, Faculty of Social Sciences, Department of History Education. The second stage of RDR model is the developmental stage carried out in accordance with result analysis from the preliminary study which have been done. Development is carried out by establishing the products in the form of developing digital literacy instruments for students that about to be produced. First activity engages at the development stage is designing digital literacy instruments for students which includes constructing the assessment instrument grids. From indicators of digital literacy attitude then the

grids were developed to be more specific through arrangement of statements on the research instruments together with conducting group discussion forums with subject lecturers related to statements on research instruments.

The final stage of RDR model is another research stage which carried out after designing digital literacy assessment instruments for the university students. After the instruments has been designed completely, the next stage was conducted an assessment regarding the feasibility of research instruments which is divided into two stages, the expert testing and product testing. The expert testing was carried out by two experts by providing an instrument rating sheet in which there were two assessment answers (relevant and irrelevant). Result of the product validation by the experts then continues with product improvement based on input and suggestions provided by the experts. For resulted input and suggestions came from the first expert was about in criteria section where there were several criteria needed to be improved to bring out a more specific result attitude (from the target students).

Whereas input and suggestions provided by the second expert was removing the word ‘able’ in the statement section. Input and suggestions given by these experts are useful for the instrument perfectness. Then, the resulted product was put into trial (product trial) to students at Gorontalo State University, Faculty of Social Sciences, Department of History Education, by employing questionnaires with score ranges from 1- 4. The complete digital literacy instruments for students which has been tested by two experts, along with the statement items (both relevant and irrelevant statements) are presented in [Table 4](#).

Table 4. Tabulation Matrix of Instrument Relevance Result

Expert 1		Expert 2	
Relevant	Irrelevant	Relevant	Irrelevant
1,2,3,4,5,6,7,8,9,10,11		1,2,3,4,5,6,7,8,9,10,11	
12,13,14,15,16,17,18		12,13,14,15,16,17,18	
19,20,21,22,23,24,25	-	19,20,21,22,23,24,25	-
26,27,28		26,27,28	

[Table 4](#) is showing 28 statement items listed within the digital literacy assessment questionnaire for students are positioned in column D which indicated a valid agreement between the two experts. Meanwhile, the content validity is calculated by the Gregory formula. According to calculation result, the content validity coefficient for the digital literacy instruments for students is 1.00 and included into a very high validity criteria. A test to validity items was executed to determine whether the items can be declared as valid or not valid, so later, the output from the validity test will result in decision when there is an invalid item, this item will be discarded and only using the valid items for the research. According to trial that have been conducted to research participants (N=30) by establishing a significant level of 5 % with the $r_{table} = 0.36$, the criteria for instrument items to be declared as valid is the r_{xy} count has greater value than the r_{xy} table (r_{xy} count > r_{xy} table). After the completion of validity test, then, a reliability test is carried out on the instrument. The reliability test is employed to determine the level of consistency from the instrument’s answers, because a test can be declared to have a high reliability level when the test can give consistent results. The reliability test was carried out using items that were declared valid, and the reliability of research instrument was tested by the Alpha Cronbach method with the help of application of SPSS Version 27. The results of SPSS instrument reliability calculations are presented in [Table 5](#).

Table 5. Reliability Test Results

Cronbach’s Alpha	N of Items
0.880	28

Based on [Table 5](#) show the result of reliability test, the r_{11} value was 0.88 thus, it can be concluded that the digital literacy instrument for students in this study is declared as reliable instrument because the reliability coefficient obtained in this research was having greater value than 0.60.

Discussion

The development of digital literacy instruments for students at Gorontalo State University, Faculty of Social Sciences, Department of History Education was constructed by RDR model which went through Research, Development, and Research stages. RDR model was selected based on consideration that the RDR model is very simple, systematic with clear stages. The use of digital literacy instruments for students which declared as reliable instrument will be able to provide an accurate assessment to achieve maximum results in developing a maximum digital literacy for students ([Mawarni et al., 2021](#); [Nahdi & Jatisunda, 2020](#); [Setiawati & Coesamin, 2023](#)).

Instrument development of digital literacy for students in this research obtained a validity number of 1.00 while the reliability test obtained a figure of 0.88 which means the digital literacy assessment instrument (for students) is suitable to be used. From previous research findings related to digital literacy, were focused on

students' ability to use technology, to communicate via online, and to use critical thinking skill (Ririen & Daryanes, 2022). Moreover, a digital literacy analysis also has a focus on internet searching, hypertext guidance, evaluation of the information content, knowledge assemblage, and ability to participate and communicate in the digital space (Dinata, 2021; Murdy & Putri, 2020). However, the difference to previous researches lies in the application of digital literacy components. In this research, the digital literacy component from the students were included the problem solving, digital skill and digital ethics. Since the digital literacy components were different, it brings effect to the indicator developed for each component. The indicator developed for digital literacy instrument for students were based on literature reviews from several references/sources and adapted to the needs of lecturer's assessment to their students in the History Education Department, Social Sciences Faculty, Gorontalo State University.

In the era of Industrial Revolution 4.0 where technology usage is inevitable, a digital literacy skill is very necessary to be owned because it is a prerequisite for an individual to fully participate in various systems that govern human life whether in our personal life as well as our collective life. There are several factors affecting digital literacy such as: 1) functional skill, the technical ability and competency needed for operating various digital tool proficiently, 2) skill, communication, and interaction which involves conversation, discussion, and building ideas from one student to another to create a common understanding; 3) critical thinking or the ability to think by involving change, analysis or processing data information or ideas given to interpret meaning to develop insights. There are some influential factors which further explained as the environmental support factor, socio-economic condition and the intensity of digital media usage (Naufal, 2021; Rosalina et al., 2021). Meanwhile, factors of active use in online media, academic achievement, role of parents or the family, also reading intensity also become the factors affecting an individual's digital literacy skill (Sanimah & Wahyuni, 2022; Syah et al., 2019). Thus, it can be concluded the digital literacy factors are influenced by external and internal factors. The external factors are include environmental support, socio-economic condition and digital facility availability, whereas for internal factors include critical thinking skill, active use of online media, also ability and skill in using any digital devices or tools.

When talking about the importance of digital literacy, the students who have digital literacy will affect their learning outcomes. Digital literacy is the knowledge and skill to use digital media, communication tools, or network in finding, evaluating, using, creating information, and utilizing the finding in a healthy, wise, intelligent, accurate, precise, and in law-abiding manner to foster communication and interaction for everyday life (Mannan & Nurpratama, 2022; Nudiati & Sudiapermana, 2020). Digital literacy acts as support system for students in finding learning references on online sites. The digital literacy also makes students possess skill to think critical in dealing with problems, communicate with others, teamwork, read culture, and learn to create their own work. Digital literacy education becomes an urgent matter since it is important to assist students when exploring the digital world. If there is no guarantee in digital literacy, then it means the higher education does not achieve one of its goals (Alakrash & Abdul Razak, 2021; Mannan & Nurpratama, 2022).

Digital literacy is an important part of the development of learning process in higher education, and universities acted as major players in the digital literacy movement. There are several literacy support programs that useful to be implemented in higher education: 1) read the study material 15 minutes before learning activity started, so the students' interest in reading is maintained and their reading skill increase to master the study material with a better accomplishment; 2) collect reading material related to the course/lecture; 3) review the reading material which has been collected before the learning activity starts (N. Kurnia & Astuti, 2017; Ningsih et al., 2019). Furthermore, students are equipped with training on how to use various digital tools, such as introducing the Renderforest.com as one way to enrich the students information. To find out whether the digital literacy has been successfully implemented or not, it requires an assessment. Therefore, lecturers must be able to use appropriate methods, techniques and instruments in conducting assessments to achieve an accurate results in their assessment.

The contribution of this research results is a product in a form of digital literacy instruments for students that have high validity and reliability values and are suitable for use with accurate result for assessing the digital literacy of the students. In addition, the advantages from the product in a form of digital literacy instruments is able to be used by lecturers for the assessment of digital literacy for students. The expectation from the digital literacy instrument for students as a product of this research can improve the students' ability to engage a critical thinking when they are using digital media. The use of digital literacy instruments in learning activities is believed to be able to help educators improve learning process in learning activities.

There are several limitations to this study due to very limited number of respondents (only two lecturers and thirty university students) which is still insufficient to describe real situation regarding the digital literacy ability from students. Moreover, in data collection process, information provided by students as respondents which taken through questionnaires are sometimes did not show their actual (real) opinions since many aspects such as different thoughts, assumptions and understandings were different for each respondent, as well as other factors such as honesty while filling out the respondent's opinion in the questionnaire papers. For future research, it is

recommended to take a larger sample aimed for improving the data accuracy of the research, also, it is expected to carry out a sustainable research to assess and to observe any changes of respondents' behavior through times.

4. CONCLUSION

The assessment result of the validity and reliability values from the digital literacy instruments are showing high scores that assuring the digital literacy instruments can be used to evaluate students' digital literacy attitude. The digital literacy skill owned by students are expecting to support their learning achievements. For the future research is expected to be able to develop, modify, and adapt digital literacy instruments in their respective environments so these instruments can function in more optimum way.

5. REFERENCES

- Alakrash, H. M., & Abdul Razak, N. (2021). Technology-Based Language Learning: Investigation of Digital Technology and Digital Literacy. *Sustainability*, 13(21), 12304. <https://doi.org/10.3390/su132112304>
- Alfalah, A., Firnadia, E., & Jendriadi. (2022). Keefektifan Teknik Tes Menggunakan Media Literasi Digital dalam Kuliah Bahasa Indonesia terhadap Mahasiswa Baru. *Jurnal Pembahas: Pembelajaran Bahasa Dan Sastra*, 1(5), 693–700. <https://doi.org/10.55909/jpbs.v1i5.194>.
- Amri, C. O., Jaelani, A. K., & Hadi Saputra, H. (2021). Peningkatan Literasi Digital Peserta Didik: Studi Pembelajaran Menggunakan E-Learning. *Jurnal Ilmiah Profesi Pendidikan*, 6(3), 546–551. <https://doi.org/10.29303/jipp.v6i3.291>.
- Anggreni, R. A., Antara, P. A., & Ujjianti, P. R. (2022). Instrumen Literasi Sains pada Anak. *Jurnal Pendidikan Anak Usia Dini Undiksha*, 10(2), 291–301. <https://doi.org/10.23887/paud.v10i2.49303>.
- Arievitch, I. M. (2020). The vision of Developmental Teaching and Learning and Bloom's Taxonomy of educational objectives. *Learning, Culture and Social Interaction*, 25. <https://doi.org/10.1016/j.lcsi.2019.01.007>.
- Astuti, W. P., Prasetyo, A. P. B., & Rahayu, E. S. (2012). Pengembangan Instrumen Asesmen Autentik Berbasis Literasi Sains Pada Materi Sistem Ekskresi. *Lembaran Ilmu Kependidikan*, 41(1), 39–43. <https://doi.org/https://journal.unnes.ac.id/nju/index.php/LIK/article/view/2228/2290>.
- Ayupradani, N. T., Sofiyana, L. N., Huda, M., Nasucha, Y., & Siswanto, H. (2021). Peningkatan Literasi Digital Anggota Karang Taruna Tunas Harapan sebagai Pembentuk Pendidikan Karakter Bangsa. *Buletin KKN Pendidikan*, 3(2), 169–174. <https://doi.org/10.23917/bkkndik.v3i2.15696>.
- Azis, D. M. K. P. L. pad. P. A. U. D., Antara, P. A., & Handayani, D. A. P. (2022). Instrumen Karakter Peduli Lingkungan pada Pendidikan Anak Usia Dini. *Jurnal Pendidikan Anak Usia Dini Undiksha*, 10(1), 25–32. <https://doi.org/10.23887/paud.v10i1.42592>.
- Benson, V., & Kolsaker, A. (2015). Instructor Approaches to Blended Learning : A Tale of Two Business Schools. *International Journal of Management Education*, 13(3), 316–325. <https://doi.org/10.1016/j.ijme.2015.10.001>.
- Bosica, J., Pyper, J. S., & MacGregor, S. (2021). Incorporating problem-based learning in a secondary school mathematics preservice teacher education course. *Teaching and Teacher Education*, 102, 103335. <https://doi.org/10.1016/j.tate.2021.103335>.
- Chan, B. S. K., Churchill, D., & Chiu, T. K. F. (2017). Digital Literacy Learning In Higher Education Through Digital Storytelling Approach. *Journal of International Education Research (JIER)*, 13(1), 1–16. <https://doi.org/10.19030/jier.v13i1.9907>.
- Darmana, A., Sutiani, A., Nasution, H. A., Ismanisa, & Nurhaswinda. (2021). Analysis of Rasch Model for the Validation of Chemistry National Exam Instruments. *Jurnal Pendidikan Sains Indonesia*, 9(3), 329–345. <https://doi.org/10.24815/jpsi.v9i3.19618>.
- Dinata, K. B. (2021). Analisis Kemampuan Literasi Digital Mahasiswa. *Edukasi: Jurnal Pendidikan*, 19(1), 105–119. <https://doi.org/10.31571/edukasi.v19i1.2499>.
- Eryansyah, E., Erlina, E., Fiftinova, F., & Nurweni, A. (2019). EFL Students' Needs of Digital Literacy to Meet the Demands of 21st Century Skills. *IRJE Indonesian Research Journal in Education*, 3(2), 442–460. <https://doi.org/10.22437/irje.v3i2.8297>.
- Eshet-Alkalai, Y. (2004). Digital Literacy: A Conceptual Framework for Survival Skills in the Digital Era. *Journal of Educational Multimedia and Hypermedia*, 13(1), 93–106. <https://www.learntechlib.org/primary/p/4793/>.
- Fernanda, F. F. H., Rahmawati, L. E., Putri, I. O., & Nur'aini, R. (2020). Penerapan Literasi Digital Di Smp Negeri 20 Surakarta. *Buletin Literasi Budaya Sekolah*, 2(2), 141–148. <https://doi.org/10.23917/blbs.v2i2.12842>.
- Huda, H., Rendi, A. W., & Wulandari, D. (2020). Budaya Literasi, Mencerdaskan Anak Negeri. *JIWAKERTA: Jurnal Ilmiah Wawasan Kuliah Kerja Nyata*, 1(2), 30–34. <https://doi.org/10.32528/jiwakerta.v1i2.5011>.

- Kaeophanuek, S., Na-Songkhla, J., & Nilsook, P. (2018). How to Enhance Digital Literacy Skills among Information Sciences Students. *Jurnal Internasional Teknologi Informasi Dan Pendidikan*, 8(4), 292–297. <https://doi.org/10.18178/ijiet.2018.8.4.1050>.
- Kurnia, M. D. (2021). Kompetensi Literasi Digital Mahasiswa Dalam Menulis Artikel Opini. *Prosiding Seminar Nasional Pascasarjana: Pascasarjana Universitas Negeri Semarang*, 4(1), 175–179. <https://doi.org/https://doi.org/https://proceeding.unnes.ac.id/index.php/snpasca/article/view/844>.
- Kurnia, N., & Astuti, S. I. (2017). Peta Gerakan Literasi Digital Di Indonesia: Studi Tentang Pelaku, Ragam Kegiatan. *Kelompok Sasaran Dan Mitra*, 4(7), 149–166. <https://doi.org/10.21831/informasi.v47i2.16079>.
- Lestari, W., Wigati, I., Sholeh, M. I., & Pramita, D. (2022). Instrumen Literasi Digital Guru Menggunakan Model Rasch. *Orbital: Jurnal Pendidikan Kimia*, 6(2), 104–113. <https://doi.org/10.19109/ojpk.v6i2.15019>.
- Mannan, E. F., & Nurpratama, M. R. (2022). Literasi Digital Mahasiswa Vokasi Di Era Pandemi Covid-19. *Info Bibliotheca: Jurnal Perpustakaan Dan Ilmu Informasi*, 3(2), 123–136. <https://doi.org/10.24036/ib.v3i2.325>.
- Maria, J. S. (2021). Digital Literacy in Digital Society 5.0: Some Challenges. *Academic Journal of Interdisciplinary Studies*, 10(2), 1–9. <https://doi.org/10.36941/ajis-2021-0033>.
- Mawarni, P., Milama, B., & Sholihat, R. N. (2021). Persepsi Calon Guru Kimia Mengenai Literasi Digital Sebagai Keterampilan Abad 21. *Jurnal Inovasi Pendidikan Kimia*, 15(2), 2849–2863. <https://doi.org/10.15294/jipk.v15i2.28394>.
- Mohammadyari, S., & Singh, H. (2014). Understanding The Effect Of E-Learning On Individual Performance: The Role Of Digital Literacy. *Computers & Education*, 82, 11–25. <https://doi.org/10.1016/j.compedu.2014.10.025>.
- Muliani, A., Karimah, F. M., Liana, M. A., Pramudita, S. A. E., Riza, M. K., & Indramayu, A. (2021). Pentingnya Peran Literasi Digital bagi Mahasiswa di Era Revolusi Industri 4.0 untuk Kemajuan Indonesia. *Journal of Education and Technology*, 1(2), 87–92. <https://doi.org/http://jurnalilmiah.org/journal/index.php/jet/article/view/61>.
- Muliastrini, N. K. E. (2019). Penguatan Literasi Baru (Literasi Data, Teknologi, Dan SDM/Humanisme) Pada Guru-Guru Sekolah Dasar Dalam Menjawab Tantangan Era Revolusi Industri 4.0. *Ganaya: Jurnal Ilmu Sosial Dan Humaniora*, 2(2), 88–102. <https://doi.org/https://jayapanguspress.penerbit.org/index.php/ganaya/article/view/354>.
- Murdy, K., & Putri, A. N. (2020). Kompetensi Literasi Digital Mahasiswa STKIP ‘Aisyiyah Riau. *Jurnal Inovasi Pendidikan Ekonomi (JIPE)*, 10(1), 71. <https://doi.org/10.24036/011084550>.
- Nafiati, D. A. (2021). Revisi Taksonomi Bloom : Kognitif , Afektif , dan Psikomotorik. *Humanika, Kajian Ilmiah Mata Kuliah Umum*, 21(2), 151–172. <https://doi.org/10.21831/hum.v21i2.29252..>
- Nahdi, D. S., & Jatisunda, M. G. (2020). Analisis Literasi Digital Calon Guru SD Dalam Pembelajaran Berbasis Virtual Classroom di Masa Pandemi Covid-19. *Jurnal Cakrawala Pendas*, 6(2), 116–123. <https://doi.org/http://dx.doi.org/10.31949/jcp.v6i1.2133>.
- Naufal, H. A. (2021). Literasi Digital. *Perspektif*, 1(2), 195–202. <https://doi.org/10.53947/perspekt.v1i2.32>.
- Ningsih, I., Winarni, R., & Roemintoyo, R. (2019). *Implementation of Digital Literacy to Achieve 21st Century Skills in The 2013's Curriculum*. <https://doi.org/10.4108/eai.27-4-2019.2286855>.
- Nisa, N. A. K., Widyastuti, R., & Hamid, A. (2018). Pengembangan Instrumen Assessment Higher Order Thinking Skill (HOTS) Pada Lembar Kerja Peserta Didik Kelas VII SMP. *Prosiding Seminar Nasional Matematika Dan Pendidikan Matematika*, 1(2), 543–556. <https://doi.org/http://www.ejournal.radenintan.ac.id/index.php/pspm/article/view/2465/1963>.
- Nudiati, D., & Sudiapermana, E. (2020). Literasi Sebagai Kecakapan Hidup Abad 21 Pada Mahasiswa. *Indonesian Journal of Learning Education and Counseling*, 3(1), 34–40. <https://doi.org/10.31960/ijolec.v3i1.561>.
- Nurchikmah, S. A. P., Siswanto, J., & Ristanto, S. (2022). Analisis Korelasi Kesadaran Metakognisi Dengan Hasil Belajar Siswa SMA. *Lontar Physics Today*, 1(3), 133–142. <https://doi.org/10.26877/lpt.v1i3.13130>.
- Rahman, T., Amalia, A., & Aziz, Z. (2020). From Digital Literacy to Digital Intelligence A Comparative Study of Digital Literacy Frameworks. *Advances in Social Science, Education and Humanities Research*, 518, 154–159. <https://doi.org/10.2991/assehr.k.210120.119>.
- Restianty, A. (2018). Literasi Digital, Sebuah Tantangan Baru Dalam Literasi Media. *Gunahumas*, 1(1), 72–87. <https://doi.org/10.17509/ghm.v1i1.28380>.
- Ririen, D., & Daryanes, F. (2022). Analisis Literasi Digital Mahasiswa. *Research and Development Journal of Education*, 8(1), 210. <https://doi.org/10.30998/rdje.v8i1.11738>.
- Riyani, R., Maizora, S., & Hanifah. (2017). Uji Validitas Pengembangan Tes Untuk Mengukur Kemampuan Pemahaman Relasional Pada Materi Persamaan Kuadrat Siswa Kelas VIII SMP. *Jurnal Penelitian Pembelajaran Matematika Sekolah*, 1(1), 60–65. <https://doi.org/10.33369/jp2ms.1.1.60-65>.
- Rosalina, D., Yuliari, K., Setianingsih, D., & Zati, M. R. (2021). Faktor – Faktor Yang Berpengaruh Terhadap Kompetensi Literasi Digital Mahasiswa di Era Revolusi Industri 4.0. *Ekonika : Jurnal Ekonomi*

- Universitas Kadiri*, 6(2), 294. <https://doi.org/10.30737/ekonika.v6i2.1996>.
- Sánchez-Cruzado, C., Campión, R. S., & Sánchez-Compañía, M. T. (2021). Teacher Digital Literacy: The Indisputable Challenge after COVID-19. *Sustainability*, 13(4), 1–29. <https://doi.org/10.3390/su13041858>.
- Sanimah, & Wahyuni, S. (2022). Peranan Mata Kuliah Ilmu Alamiah Dasar Terhadap Literasi Digital Mahasiswa Prodi Pendidikan Bahasa Inggris STKIP Budidaya Binjai yang diajarkan dengan Model Blended Learning. *Jurnal Bioshell*, 11(2), 68–77. <https://doi.org/http://ejurnal.uij.ac.id/index.php/BIO/article/view/1655%0Ahttp://ejurnal.uij.ac.id/index.php/BIO/article/download/1655/1276>.
- Setiawati, S., & Coesamin, M. (2023). Pengaruh Kemandirian Belajar dan Literasi Digital Mahasiswa Terhadap Hasil Belajar. *Jurnal Pendidikan Matematika Universitas Lampung*, 11(1), 67–74. <https://doi.org/10.23960/mtk/v11i1.pp67-74>.
- Shavab, O. A. K. (2020). Literasi Digital Melalui Pemanfaatan Media Pembelajaran Edmodo Pada Pembelajaran Sejarah. *Jurnal Sejarah Dan Budaya*, 14(2), 142–152. <https://doi.org/10.17977/um020v14i22020p142>.
- Sholihatin, E., Swasti, I. K., Kusumastuti, E., Febrianita, R., DwiAprilisanda, I., Widoretno, A. A., & Haryono, N. (2021). Peningkatan Literasi Digital Era New Normal: Studi Kasus Pembelajaran Daring Mahasiswa Akuntansi Upn Veteran Jawa Timur. *Jurnal Akuntansi Integratif*, 7(1), 83–103. <https://doi.org/10.29080/jai.v7i1.457>.
- Suryanti, & Wijayanti, L. (2018). Literasi Digital: Kompetensi Mendesak Pendidik Di Era Revolusi Industri 4.0. *EduStream: Jurnal Pendidikan Dasar*, 2(1), 1–9. <https://doi.org/10.26740/eds.v2n1.p1-9>.
- Suwarto, D. H., Setiawan, B., & Machmiyah, S. (2022). Developing Digital Literacy Practices in Yogyakarta Elementary Schools. *The Electronic Journal of E-Learning*, 20(2), 101–111. <https://doi.org/10.34190/ejel.20.2.2602>.
- Syah, R., Darmawan, D., & Purnawan, A. (2019). Analisis Faktor yang Mempengaruhi Kemampuan Literasi Digital. *Jurnal Akrab (Aksara Agar Berdaya)*, 10(2), 60–69. <https://doi.org/10.51495/jurnalakrab.v10i2.290>.
- Tang, C. M., & Chaw, L. Y. (2016). Digital literacy: A prerequisite for effective learning in a blended learning environment? *Electronic Journal of E-Learning*, 14(1), 54–65. <https://eric.ed.gov/?id=EJ1099109>.
- Tohara, A. J. T. (2021). Exploring Digital Literacy Strategies for Students with Special Educational Needs in the Digital Age. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(9), 3345–3358. <https://doi.org/10.17762/turcomat.v12i9.5741>.
- Tomczyk, Ł., & Walker, C. (2021). The emergency (crisis) e-learning as a challenge for teachers in Poland. In *Education and Information Technologies* (Vol. 26, Issue 6). Springer US. <https://doi.org/10.1007/s10639-021-10539-7>.
- Winarsih, E., & Furinawati, Y. (2018). Literasi Teknologi Dan Literasi Digital Untuk Menumbuhkan Keterampilan Berwirausaha Bagi Kelompok Pemuda Di Kota Madiun. *Seminar Nasional Edusainstek*, 23–29. <https://jurnal.unimus.ac.id/index.php/psn12012010/article/view/4181>.
- Wulandari, D., Khusaini, K., & Syamiya, E. N. (2022). Literasi Digital Sebagai Faktor Penentu Prestasi Akademik. *SAP (Susunan Artikel Pendidikan)*, 6(3). <https://doi.org/https://journal.lppmunindra.ac.id/index.php/SAP/article/view/11925/4646>.
- Yulastini, N. K. S. Y., & Kusumawardani, N. M. D. N. (2022). Literasi Digital Pemanfaatan Modul Aplikasi Sevima Edlink dalam Perkuliahan Daring Mahasiswa Prodi Bimbingan dan Konseling FKIP Universitas PGRI Mahadewa Indonesia. *Jurnal Pengabdian Masyarakat Ilmu Pendidikan*, 1(01). <https://doi.org/10.23960/jpmip.v1i01.33>.
- Yustika, G. P., & Iswati, S. (2020). Digital Literacy in Formal Online Education: A Short Review. *Dinamika Pendidikan*, 15(1), 66–76. <https://doi.org/10.15294/dp.v15i1.23779>.