

## How to Assess Digital Literacy Skills of Elementary School Students?

Suwanto<sup>1</sup>, Wiwik Lestari<sup>2</sup> Universitas  
Negeri Medan, Indonesia<sup>1</sup>  
North Sumatra Haji University, Indonesia<sup>2</sup>  
Coresspondent: [suwantompd89@gmail.com](mailto:suwantompd89@gmail.com)<sup>1</sup>

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**ABSTRACT:** Students need digital literacy skills to face the 21st century, so teachers must monitor the development of their digital literacy skills. Therefore, instruments are needed to monitor digital literacy skills, but the instruments currently available have not taken into account the psychological, cognitive, and psychomotor development of elementary school children, even though they have limitations in accessing digital devices and limited vocabulary. These problems prompted the need for instrument development using the modified Tiagarajan 4-D development model, Difine, Design, and Development. Instrument development criteria must meet the validity and practicality of the instrument. The instrument was prepared using the Google Form platform, consisting of 13 statements in the form of a Likert questionnaire and 22 statements in the form of an essay test. Qualitative data were analyzed by data collection, data reduction, data presentation, and data verification, while descriptive statistics and item analysis analyzed quantitative data. The instrument design was validated by five validators with a validation level of 3.4, which was declared valid, although the instrument had to be revised. Then the instrument trials were carried out and the quality of the instruments was obtained with a validity level of 19 questions declared valid, 3 quite valid, and 3 very valid, while the Reliability Level was 0.885 for the questionnaire and 0.871 for the test instrument. At the same time, the level of practicality of the instrument was obtained from the teacher's response to the instrument at 76.1 or practical. Even though it meets practical, valid, and effective criteria, apart from having to present it through digital devices, attention needs to be paid to the ability to use symbols and tools and at a minimum must fulfill information skills, digital tools usage, and digital transformation.

**Keywords:** Digital literacy skills, Digital Devices, Elementary School Students, Instrument Development



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## INTRODUCTION

The rapid development of technology in the digital era accelerates the process of disseminating information so that it is very easy for someone to obtain and produce information. However, the rapid spread of information is often misused by individuals for personal gain, even to the point of producing hoax information (Rahadi 2017; Rifauddin dan Halida 2018). Currently, more than half of Indonesia's population uses the Internet, 53.6% of them, or 71 million people are dominated by the productive age group of 25 to 44 years (Kurnia dan Astuti 2017). The most accessed type of content is social media, followed by entertainment content and educational content (APJII 2016), a high frequency of access does not guarantee that Indonesian netizens use the internet

and social media wisely. Ignorance in the use of the internet and social media creates gaps in using the internet (Kurnia dan Astuti 2017).

The use of social media by children or adolescents who are not wise can harm their psychological development and poor digital literacy skills (Pratiwi dan Pritanova 2017), even to the point of causing mental disorders and acute addiction to gadgets (Prasetya 2022). Elementary school children who are teenagers need recognition from their community and environment, so when they get insufficient information, they quickly give bullying statements and when they get good information, they quickly plagiarize it (Mustofa dan Budiwati 2019). Of course, as the next generation of the nation, characters like this are not expected, so it is very necessary to understand children's digital literacy abilities from the start. Character building should be done for elementary school-age children, but the limited vocabulary and availability of information suitable for elementary school-age children and the absence of demands for children to seek information, make children prefer to play games that offer fun and ease of operation. So do not be surprised if Indonesia gets a score of 371 under the OECD standard of 487 for reading culture (OECD 2019). In the end, good digital literacy skills will not be formed for elementary school children as future generations.

Therefore, in this digital era, literacy skills are needed starting at the elementary school level. Unfiltered information overload can harm and confuse the public who are not able to know right and wrong information. Digital literacy skills are expected to be capital to face the needs of the 21st century. Being able to think critically about any information obtained, being able to protect personal data, and being able to use information effectively and efficiently an essential ability to face the 21st century later. The level of digital literacy skills in elementary school children is different from that of adults so the instruments for measuring the digital literacy abilities of elementary school children are also different. The importance of digital skills in the 21st century, it is necessary to monitor the development of each individual's digital literacy skills and to know this requires the right instrument. The digital literacy instruments that have been developed so far are not explicitly intended for elementary school students, for example, for teachers (Lestari et al. 2022; Nopitasari et al. 2023); college students (Lukitasari et al. 2022) and middle-class students (Febliza dan Okatariyani 2020; Pratiwi dan Pritanova 2017). Therefore, an appropriate instrument is needed to measure digital literacy skills specifically for elementary school children. An excellent digital literacy instrument must consider many factors, including approach, feasibility, application, scope and output, and social context (Arvianto 2023)

Digital literacy is a crucial 21st-century skill that significantly increases the employability of graduates (Owen et al. 2016). Digital literacy skills themselves are understood as the ability to understand and use information in multiple formats from various sources when it is presented on a computer (Gilster 1997). On the other hand, Owen et al. (2016) defined digital literacy skills involves the ability to find, use, and disseminate information in the digital world. The definition of digital literacy formulated above is general in nature, but how to formulate digital literacy abilities for elementary school-age children, considering that cognitive development, psychological development, and psychomotor development of children at elementary school age are still at a developing stage. Then what kind of digital literacy skills are appropriate for elementary school-age children to master or understand? It is hoped that the formulation of digital literacy abilities in

elementary school children will become the basis for preparing reliable and accurate instruments in measuring the digital literacy abilities of elementary school children.

Luthfia et al., (2023) divides digital literacy into several literacy sub-disciplines including; information literacy, computer literacy, media literacy, communication literacy, visual literacy, and technology literacy. Of the several literacy sub-disciplines, some are impossible for elementary school students to understand, for example in computer literacy, not because they are unable, but because their limitations in accessing digital hardware and digital software are limited (Alderete dan Formichella 2023; Barrett, Moore, dan Slate 2014). The literacy sub-discipline that is detrimental to the level of digital literacy ability of elementary school students is the information literacy sub-discipline. One of the demands for communication literacy that elementary school children cannot fulfill is finding a credible source, among the many sources of information spread across the internet, even some elementary school teachers are unable to find a credible source of information (Rosyidah et al. 2020). To ensure that the information obtained from students is valid, it must be verified by the teacher (Ichsan et al. 2019). Therefore, if the digital literacy abilities of elementary school students are aligned with digital literacy skills in general, then the instrument can dwarf digital literacy abilities. On the other hand, Kaeophanuek et al., (2018) and Lee, (2014) divide digital literacy into three indicators namely information skills, digital tool usage, and digital transformation.

The main objective of this research is to develop digital literacy instruments that are appropriate to the development of elementary school students, to obtain more reliable and fairer results. Then the instruments developed can become the basis for developing digital literacy skills instruments, whose definitions are adapted to elementary school students so that they can help teachers achieve instructional goals in learning. Thus, the teacher can design learning that combines the instructional objectives of the learning field and the instructional goals of digital literacy (Pohan dan Suparman 2020). Linking digital literacy to the learning process is a form of support for the elementary school literacy movement (Hidayat dan Basuki 2018; Khotimah, Akbar, dan Sa'dijah 2018).

## METHOD

To answer the formulation of the problem, the type of Research and Development (R&D) research with the Tiagarajan 4-D (Thiagarajan, Semmel, dan Semmel 1974) model was modified to (Define, Design and Development) (Suwanto dan Purba 2021), which can be seen in Figure 1. The research subjects involved in the development of digital literacy instruments consisted of 5 experts or experts who performed instrument validation, 8 teachers as instrument users to see the practicality of the instrument, 40 students as instrument test subjects to see the effectiveness of digital literacy instruments. Experts or experts come from academics and digital literacy practitioners. Meanwhile, teachers and students come from two schools located in Medan City, namely SD IT Nur Ikhsan with 22 students, and SD Negeri 067694 with 18 students. The selection of the two samples used purposive sampling with the criteria of elementary schools coming from the city of Medan and representing public and private elementary schools.

The criteria for digital literacy instruments must be valid, practical, and effective (Santi dan Santosa 2016; Widiyanti, Suparta, dan Sariyasa 2022). The level of validity was obtained from the results

of the instrument trials with correlation tests (Arikunto 2018) and the results of the validity sheet of experts who assessed the design, language, and feasibility of the instrument (Nurhamidah 2021) with validity criteria; (1) invalid ( $0 \leq kv < 1$ ); (2) Invalid ( $1 \leq kv < 2$ ); (3) valid ( $2 \leq kv < 3$ ); and (4) very valid ( $3 \leq kv < 4$ ) (Riyani, Maizora, dan Hanifah 2017). The level of practicality is obtained from the teacher's response as a user with indicators; (1) suitability of content; (2) use of language; (3) conformity with students; (4) Presentation of instruments; (5) effectiveness of Use; (6) user satisfaction; (7) the ease of interpreting the results. The practicality level is determined by comparing the teacher's response score and the instrument's ideal score with practicality criteria; (1) impractical/invalid ( $0 - 20$ ); (2) less practical/valid ( $21 - 40$ ); (3) reasonably practical/valid ( $41 - 60$ ); (4) practical/valid ( $61-80$ ); and (5) very practical/valid ( $81-100$ ) (Dwi Septiani dan Okmarisa 2023; Irsalina dan Dwiningsih 2018).

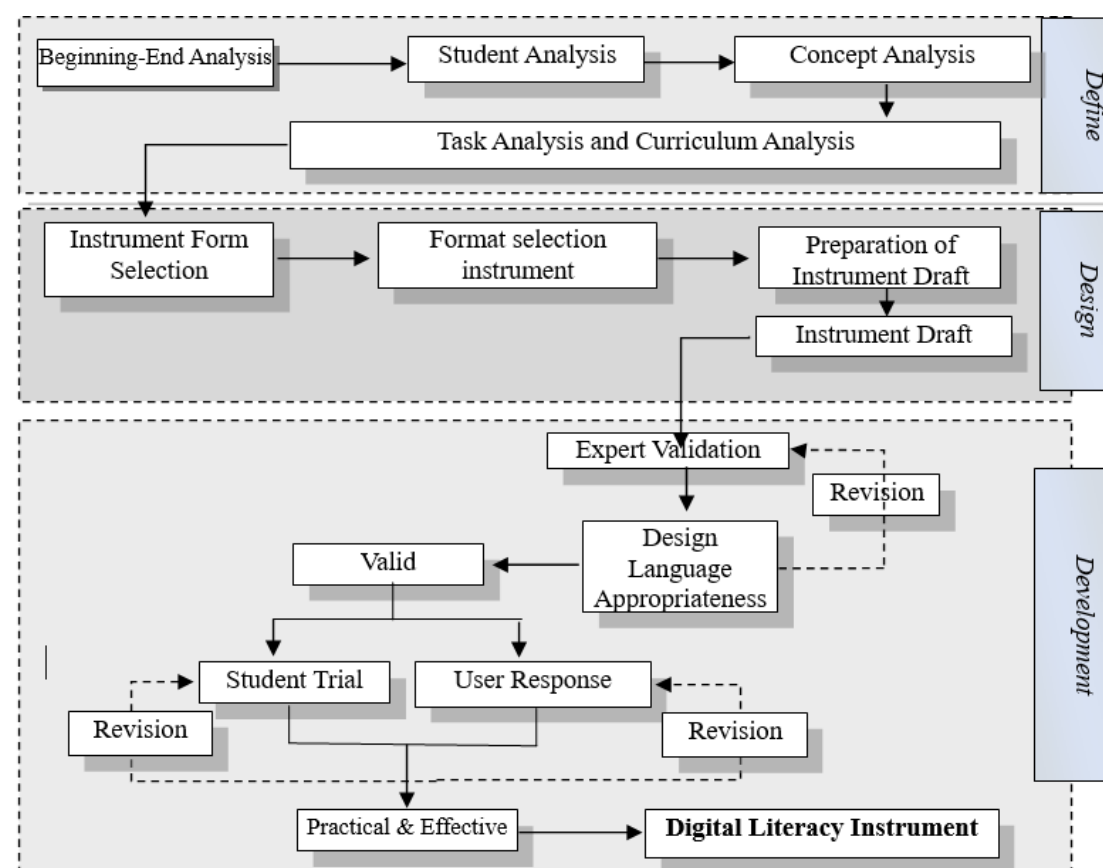


Figure 1. Research Design(Yuanita, Akhsan, dan Wiyono 2015)

Data collection techniques at the fine and design stages are in the form of qualitative data and quantitative data. Qualitative data will be analyzed through several stages of data collection, data reduction, data presentation, and data verification stages, while quantitative data will be analyzed using descriptive statistics. While at the development stage to obtain the level of validity, practicality, and effectiveness of the instrument, using several methods including; (1) an expert validation sheet; (2) a teacher response sheet; and (3) testing of the digital literacy instrument itself with table 2 grid. So that the data obtained is in the form of quantitative data which is analyzed using descriptive statistics and the Pearson correlation test.

**Table 1. Digital literacy sub-discipline indicators**

Kaeophanuek (2018) Information Skill	Covello (2010) Information Literacy Visual literacy	Indicator  Seek, find, and evaluate sources of information,
	Media Literacy	Analyze and synthesize information
Digital Transformation	Communication literacy	Convey information effectively as a group or individually through digital media
Digital Tool Usage	Computer Literacy Technology Literacy	Use software and hardware properly to improve learning, productivity, and performance

(Covello 2010; Kaeophanuek et al. 2018)

## RESULT AND DISCUSSION

### Defining Stage

Initial and final analysis are the main reasons why the process of developing this instrument was carried out, namely to develop digital literacy instruments that are suitable for elementary school children and their characteristics. Then based on the initial-end analysis, it is continued with an analysis of the characteristics of elementary school students related to digital literacy skills. Such as the use of the device (Figure 2) and the information students are looking for (Figure 3).

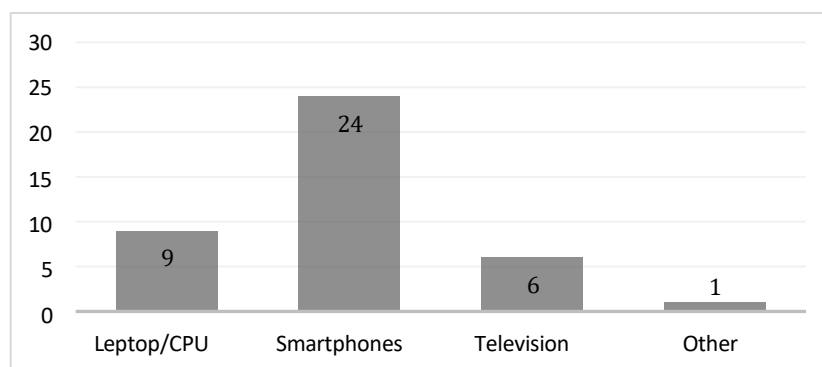


Figure 2. Students use digital devices

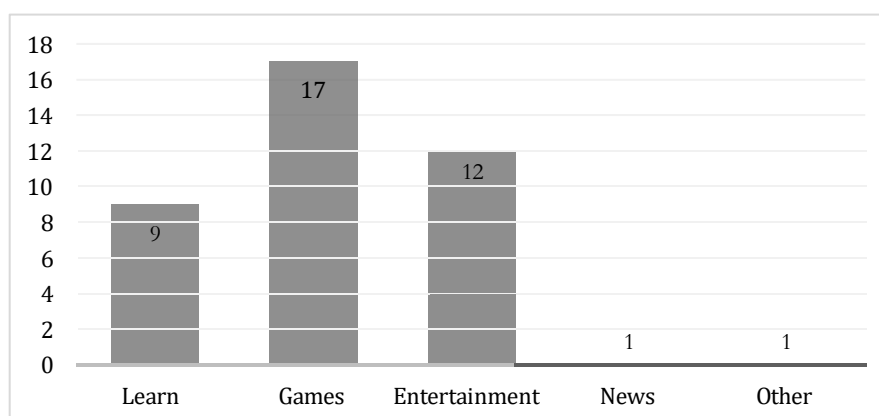


Figure 3. Information Students are Looking for

## Design Stage

At this stage the form of the instrument to be used will be carried out, namely instruments in the form of questionnaires and tests through online media. The instrument utilizes the google form platform which consists of a questionnaire with 13 statements and a test with 22 questions. The digital literacy instrument grid can be seen in Table 2.

**Table 2. Digital literacy grid**

Indicator Open-ended Question	Instrument Items		Indicator Questioner
	Open-ended Question	Questionnaire	
Seek, find, and evaluate sources of information,	1, 2, 3, 4, 5	1,2, 3, 4	usability
Analyze and synthesize information	6,7, 8, 9, 10, 11	5, 6, 7	convenience
Convey information effectively as a group or individually through digital media	12, 13, 14, 15, 16, 17	8, 9,10	attractive
Use software and hardware properly to improve learning, productivity, and performance	18, 19, 20, 21, 22, 23, 24, 25		

Of course, the statements that have been prepared are by the results of the characteristics of the previous students. The preparation of the digital literacy instrument draft was carried out in two versions, namely in digital form through a Google form link and in document form. Besides that, in addition to the draft of the digital literacy instrument, questionnaires were also prepared for the responses of instrument users in the form of documents.

## Development Stage

Expert validation is carried out by experts or practitioners to see the design, language, and feasibility of the instruments that have been prepared. Instrument design assesses the appearance of the instrument which includes; layout, presentation techniques, and visibility. The language component of the instrument includes assessment; straightforwardness, communicativeness, conformity to student characteristics, and the use of symbols or terms, as for the feasibility of looking at the scope of the material and the accuracy of the material. The instrument draft will be submitted to 5 validators who then from the suggestions given will revise the instrument draft and give it to the validator again to produce data as in Table 3.

In the expert validation process, there were several improvements, namely in the language component in the directness sub-component and suitability for student characteristics. Some several statements/ statements are still not standard, because they create ambiguity in the question. Apart from that, there were also several booths where the instructions were unclear so many students had difficulty answering these questions. Then the feasibility component of the material coverage sub-component also needs to be improved, because the material is too deep so many students do not understand what is being asked. After the repairs were carried out, good results were obtained as shown in Table 3.



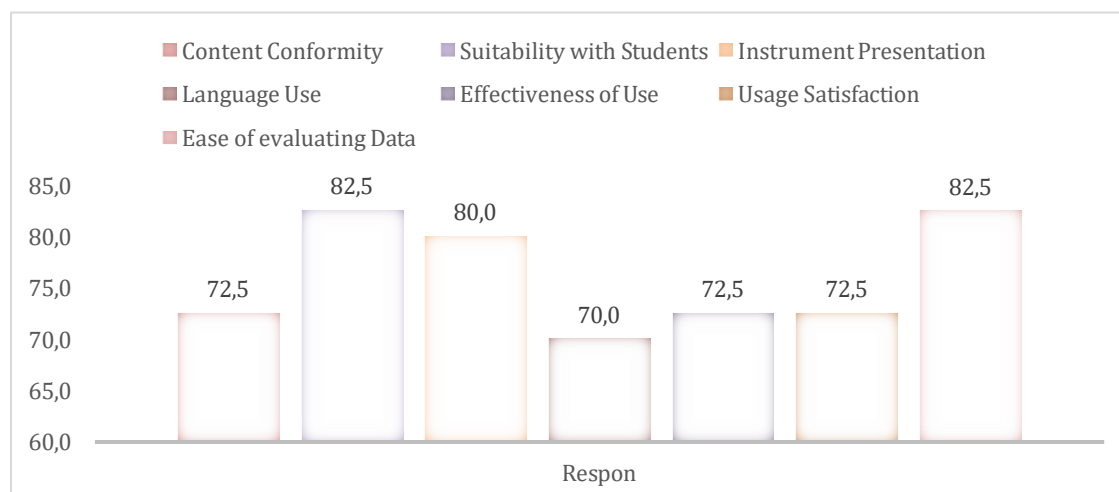
**Table 3. Instrument expert validation results**

Component	Sub-component	Draft score	
		Before Revision	After Revision
Design	Layout	4,0	4,4
	Presentation Technique	3,6	4,0
	Visibility	3,4	4,6
Language	directness	2,4	3,4
	communicative	3,6	4,2
	Characteristic fit	2,6	3,4
	Symbol	4,4	4,2
Appropriateness	Material coverage	2,6	3,2
	Material accuracy	3,8	4,4

The following process was development trials, trials were carried out in 2 schools; 1 Public Elementary School and 1 Private Elementary School involving 8 teachers and 40 students. The forty students will provide data and the data will be analyzed for the quality of the instrument by determining the level of validation and reliability of the instrument. The results of the analysis of student responses to the instruments compiled obtained 2 very valid items, 5 valid items, and 3 valid enough items for open questions can be seen in (Table 4). Then from the test, the practicality level of the instrument will be obtained through the response questionnaire from users of the digital literacy instrument obtained in Figure 3. Based on the results of the eight teachers' responses to the digital literacy instrument, the average practicality level of the instrument is 76.1 or in the practical category. Therefore, the development of the instrument is considered complete.

**Table 4. Level of validation and reliability of digital literacy instruments**

Validity Criteria	Test Instruments	Total question items
Valid Enough	3, 16, 20	3 Question
Valid	1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13 14, 15, 17, 19, 22, 23, 24, and 25	19 Question
Very Valid	18, 21	3 Question
<b>Reliable</b>	<b>0,807 (reliable)</b>	<b>25 Question</b>



**Figure 4.** Teacher's response to the instrument

*The use of devices*, the age of elementary school children is between 6 and 12 years (Marinda 2020); it is at this age that children first develop basic skills in writing, reading, counting, and exploring the world, and can think systematically about concrete objects and actual events (Haryanti 2017). At the low-grade level of elementary schools, some of the abilities above are still in the developing or learning stage, so they are slow to search in the digital world. However, several search platforms such as Google already provide voice features, making it easier to search. Then students who have limitations in reading can access videos that they can understand. Thus, even though they do not master basic literacy well, they have mastered the basic skills of using ICT devices well. Basic skills in Information Technology and Technology (ICT), related to students' ability to use ICT devices in communicating. Most elementary school students can operate devices (Huda dan Astuti 2021) because devices are more practical to operate. However, for more complex devices such as CPUs, only some students can operate them, due to their limitations in accessing the CPU. This limitation is due to the high cost of the device, the difficulty of maintaining the device, and the impracticality of operating the device. Even though they are lacking in operating the CPU, they are pretty confident in operating the device compared to adults/parents (Wulandari, Asiah, dan Santoso 2021). However, some parents are worried about the impact of using gadgets on their children (Wicaksono, Rakhmawati, dan Suryandari 2021), with a child's curiosity to explore the world trying to learn (Ratih, Herlina, dan Yusmaharani 2020) children.

Digital literacy levels, Digital literacy skills are divided into 3 levels namely; (1) the first level of digital competence; (2) the second level of digital use; and (3) and the third level of digital transformation (Chan, Churchill, dan Chiu 2017). The characteristics of digital skill levels are certainly related to the abilities and developmental characteristics of elementary school children. At this age children have characteristics, happy to play; happy to move, enjoy working in groups, and happy to do it directly (Haryanti dan Febriyanto 2017). The use of gadgets in elementary school children has a positive effect on the ability to communicate with friends but harms the psychological development of children. However, it also harms psychological development such as emotional growth, prosocial behavior, and moral development (Syifa, Setianingsih, dan Sulianto 2019).

*Cognitive and language development*, according to Piaget's theory, elementary school-aged children's cognitive development enters the operational concrete stage (Mu'min 2013). At this time, children can learn from concrete objects that they can observe and feel directly. Cognitive development is closely related to motor development and child psychological development. Therefore, concerning their



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digital literacy skills, they need guidance from people who understand digital literacy better. The development of the use of language in children aged 6-12 years is very varied (Eilen & Marotz, 2020). Likes to tell stories and converse like adults, likes to learn new vocabulary up to 14,000 words up to words with meaningful connotations, and uses formal language.

Next, from the analysis of student characteristics, it continued with an analysis of the concept of digital literacy by tracing several articles related to digital literacy with article criteria that are relevant to this research, including; (1) Google Scholar-indexed articles (Patimah dan Sumartini 2022); (2) articles that focus on literacy skills; (3) articles related to digital literacy keywords; and (4) articles published within the last ten years. Information literacy skills include; (1) identifying information; (2) identifying sources of information; (3) finding information effectively and efficiently; (4) evaluating information critically; (5) compiling and using information appropriately; and (6) communicating information effectively (Eisenberg dan Berkowitz 1990). Literacy is also defined as using language and images in rich and varied forms to read, write, listen, speak, see, present, and think critically about ideas (Pratiwi dan Pritanova 2017).

Identification as the process of determining or establishing the identity of people, objects, and so on. So that in the identification process students are able to determine the identity/characteristics of the information being examined as needed or not. The next ability of students is to identify sources of information that are valid or not (Winata, Cacik, dan W. 2018). Validation of information sources in the digital world needs to be done because many online media have not been verified, and many social media accounts produce hoax information (Putri 2018) for personal and group interests. The innocence of children at elementary school age makes them trust more sources of information that come from teachers (Sari, Saputra, dan Affandi 2022) as people they consider 'smart'. Therefore, students in validating digital information sources look at the references given by people they consider innovative, especially low-grade students. Thus, the ability of students to identify sources of information is greatly influenced by intelligent people around them such as parents (Fatmawati 2019).

To find effective and efficient information, a reading strategy is needed (Romansyah 2017), as a good understanding of vocabulary, so that students can find, select, and manage digital information properly. The ability to find effective and efficient information also implies the ability to find valid sources of information (Winata et al. 2018) and also the ability to evaluate critically. Critical is interpreted as a response that is not quick to believe or tries to find mistakes (KBBI 2021), and critical thinking is defined as the process of evaluating other people's information/statements so that they can make new statements based on evidence (Enggen dan Kauchack 2012; Rainbolt dan Dwyer 2012). From a series of digital literacy processes, ending with the ability to communicate information obtained and analyzed by these students. In communicating information to others, it is not only the content of the information, but the technique of conveying information through digital media such as CPUs, gadgets, laptops and so on must be mastered by students (Davis dan Shaw 2011).

The central competencies in digital literacy consist of discovering, navigating, synthesizing, critically analyzing, creating, and communicating (Owen et al. 2016). The ability to find and navigate information is closely related to basic literacy skills and the ability to operate ICT devices. Meanwhile, the ability to synthesize analyze, and create is related to cognitive behavior in Bloom's taxonomy (Fadhilaturrahmi dan Ananda 2018). Elementary school students with limited vocabulary and self-confidence struggle to communicate their ideas to others. Fluency and firmness when conveying information is an indicator that students can communicate information. Then, communication media that can be used by students can be in the form of visual, audio, and

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audio-visual media (Haryadi dan Ulumuddin 2018). Furthermore, digital literacy skills consist of information, devices, media, communication, visual and technology sub-literacy. Digital literacy instruments are designed in 2 forms, namely questionnaires and open questions (Kaeophanuek et al. 2018). The questionnaire measures responses to the use of digital devices, which contain aspects of usability, youth, and attractiveness (Asrizal et al. 2018), and open questions to evaluate digital literacy skills which contain three aspects of information skills, digital tools usage, and digital transformation.

Based on the data obtained, students scored low on the information skill component, and they still have difficulty distinguishing credible or non-credible sources (Pilgrim dan Vasinda 2021). When searching for information they only use the Google search engine (Salehudin, Marniah, dan Hariati 2020) and choose the source suggested by Google at the top. If they feel they have found the information are looking for, they do not compare it with other information as a form of synthesizing information. Most students only copy, and without writing sources of information or plagiarism (Fatkhuri dan Nurdin 2022). This shows bad literacy ethics. Then interesting things were found besides using how to type the keywords they wanted to search for, they used the voice icon to search for information, which was done mainly by low-grade elementary school students. They use this method because at their age they still have limited vocabulary and it's easier. They can understand icons such as voice, share, search, and others because their cognitive development is still concrete (Priyono, Rahmawati, dan Pudyaningtyas 2021).

## CONCLUSION

Digital literacy instruments in the questionnaires and open-ended questions that are valid, effective, and practical must be presented on a computer or online media. Even though they have met the requirements, students still have difficulty answering questions that require information skills, so in this aspect, it is necessary to pay attention to the limitations of writing, reading which includes the ability to use symbols and tools when searching and disseminating information in the form of videos. However, even though it must meet the developmental level of elementary school students, the contents of the instrument must at least contain aspects of information skills, aspects of using digital tools, and aspects of digital transformation.

## REFERENCE

- Alderete, María Verónica, dan María Marta Formichella. 2023. "Access to ICT at Argentine elementary school children's homes and its impact on school achievements." *Education and Information Technologies* 28(3):2767–90. doi: 10.1007/s10639-022-11227-w.
- APJII. 2016. "Buletin APJII: Memeratakan Akses Internet Di Negara Kepulauan." *Buletin APJII*, November, 1.
- Arikunto, S. 2018. *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: PT. Bumi Aksara.
- Arvianto, Faizal. 2023. "Designing an Instrument to Measure Digital Literacy Competence Using the 4D Model." 16(4):845–60.
- Asrizal, A. Amran, A. Ananda, F. Festiyed, dan R. Sumarmin. 2018. "The development of integrated science instructional materials to improve students' digital literacy in scientific

- approach.” *Jurnal Pendidikan IPA Indonesia* 7(4):442–50. doi: 10.15294/jpii.v7i4.13613.
- Barrett, Julie A., George W. Moore, dan John R. Slate. 2014. “Elementary Students in Texas: Inequitable Access to Computers.” *Journal of Education Research* 8(3):107–21. doi: [https://www.researchgate.net/publication/348018138\\_ELEMENTARY](https://www.researchgate.net/publication/348018138_ELEMENTARY).
- Chan, B. S. K., D. Churchill, dan T. K. F. Chiu. 2017. “Digital Literacy Learning In Higher Education Through Digital Storytelling Approach.” *Journal of International Education Research (JIER)* 13(1):1–16. doi: <https://doi.org/10.19030/jier.v13i1.9907>.
- Covello, Stephen. 2010. “A Review of Digital Literacy Assessment Instruments.” Hal. 1–31 in *Front-End Analysis Research*.
- Davis, Charles H., dan Debora Shaw. 2011. *Introduction to Information Science and Technology*. New York: Medford Information Today.
- Dwi Septiani, Berliana, dan Heppy Okmarisa. 2023. “Pengembangan Media Pembelajaran Menggunakan Construct 2 Dengan Pendekatan Scaffolding Pada Materi Laju Reaksi.” *Journal of Research and Education Chemistry* 5(1):12. doi: 10.25299/jrec.2023.vol5(1).12548.
- Eisenberg, M. B., dan R. E. Berkowitz. 1990. *Information problem-solving: the Big Six Skills approach to library & information skills instruction*. Norwood, NJ: Ablex.
- Enggen, Paul, dan Don Kauchack. 2012. *Strategi dan Model Pembelajaran: Mengajarkan Konten dan Keterampilan Berpikir*. Jakarta: PT Indeka.
- Fadhilaturrahmi, Fadhilaturrahmi, dan Rizki Ananda. 2018. “Evaluasi Pembelajaran Ips Berbasis Taksonomi Bloom Dua Dimensi Di Sekolah Dasar.” *Jurnal Basicedu* 1(2):12–21. doi: 10.31004/basicedu.v1i2.2.
- Fatkhuri, Fatkhuri, dan Nurdin Nurdin. 2022. “Pelatihan Penulisan Karya Ilmiah Bebas Plagiarisme Untuk Mahasiswa Fakultas Hukum Upn Veteran Jakarta.” *SWARNA: Jurnal Pengabdian Kepada Masyarakat* 1(4):375–83. doi: 10.55681/swarna.v1i4.140.
- Fatmawati, Nur Ika. 2019. “Literasi Digital, Mendidikan Anak di Era Digital bagi Orang Tua Milenial.” *Jurnal Politik dan Sosial Kemasyarakatan* 11(2):119–38. doi: <https://doi.org/10.52166/madani.v11i2.3267>.
- Febliza, Asyti, dan Oktariani Okatariyani. 2020. “Pengembangan Instrumen Literasi Digital Sekolah, Siswa Dan Guru.” *Jurnal Pendidikan Kimia Universitas Riau* 5(1):1. doi: 10.33578/jpk-unri.v5i1.7776.
- Gilster, Paul. 1997. *Digital Literacy*. United Stated: John Wiley & Sons, Inc.
- Haryadi, Toto, dan Dimas Irawan Ihya’ Ulumuddin. 2018. “Penanaman Nilai dan Moral pada Anak Sekolah Dasar dengan Pendekatan Storytelling Melalui Media Komunikasi Visual.” *ANDHARUPA: Jurnal Desain Komunikasi Visual & Multimedia* 2(01):56–72. doi: 10.33633/andharupa.v2i01.1018.
- Haryanti, Yuyun Dwi. 2017. “Model Problem Based Learning Membangun.” *Cakrawala Pendas* 3(2):57–63. doi: <http://dx.doi.org/10.31949/jcp.v3i2.596>.
- Haryanti, Yuyun Dwi, dan BUDI Febriyanto. 2017. “Model Problem Based Learning Membangun Kemampuan Berpikir Kritis Siswa Sekolah Dasar.” *Jurnal Cakrawala Pendas* 3(2). doi:

- Hidayat, M. H., dan I. A. Basuki. 2018. "Gerakan Literasi Sekolah di Sekolah Dasar." *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan* 3(6):810–17. doi: <http://dx.doi.org/10.17977/jptpp.v3i6.11213>.
- Huda, Irkham Abdaul, dan Suhandi Astuti Astuti. 2021. "Pengembangan Bahan Ajar Matematika Daring Untuk Meningkatkan Kemampuan Pemecahan Masalah." *Jurnal Derivat: Jurnal Matematika dan Pendidikan Matematika* 8(1):48–60. doi: 10.31316/j.derivat.v8i1.1679.
- Ichsan, Ilmi Zajuli, Diana Vivanti Sigit, Mieke Miarsyah, Ahmad Ali, Wiwin Pramita Arif, dan Trio Ageng Prayitno. 2019. "HOTS-AEP: Higher order thinking skills from elementary to master students in environmental learning." *European Journal of Educational Research* 8(4):935–42. doi: 10.12973/eu-jer.8.4.935.
- Irsalina, Ayu, dan Kusumawati Dwiningsih. 2018. "Analisis Kepraktisan Pengembangan Lembar Kegiatan Peserta Didik (LKPD) Berorientasi Blended Learning pada Materi Asam Basa." *JKPK (Jurnal Kimia dan Pendidikan Kimia)* 3(3):171–82. doi: 10.20961/jkpk.v3i3.25648 Accepted:
- Kaeophanuek, Siriwatchana, Jaitip Na-Songkhla, dan Prachyanun Nilsook. 2018. "How to Enhance Digital Literacy Skills among Information Sciences Students." *International Journal of Information and Education Technology* 8(4):292–97. doi: 10.18178/ijet.2018.8.4.1050.
- KBBI. 2021. "KBBI Daring." *Kemendikbud*. Diambil (<https://kbbi.kemdikbud.go.id/Cari/Index>).
- Khotimah, Khusnul, Sa'dun Akbar, dan Cholis Sa'dijah. 2018. "Pelaksanaan Gerakan Literasi Sekolah." *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan* 3(11):1488–98. doi: <http://dx.doi.org/10.17977/jptpp.v3i11.11778>.
- Kurnia, Novi, dan Santi Indra Astuti. 2017. "Peta Gerakan Literasi Digital Di Indonesia: Studi Tentang Pelaku, Ragam Kegiatan, Kelompok Sasaran Dan Mitra Yang Dilakukan Oleh Japeli." *Informasi* 47(2):149. doi: 10.21831/informasi.v47i2.16079.
- Lee, Seung-Hyun. 2014. "Digital Literacy Education for the Development of Digital Literacy." *International Journal of Digital Literacy and Digital Competence* 5(3):29–43. doi: 10.4018/ijdlcd.2014070103.
- Lestari, Weni, Indah Wigati, Moh Ismail Sholeh, dan Desi Pramita. 2022. "Instrumen Literasi Digital Guru Menggunakan Model Rasch." *Orbital: Jurnal Pendidikan Kimia* 6(2):104–13. doi: 10.19109/ojpk.v6i2.15019.
- Lukitasari, Marheny, Wasilatul Murtafiah, Siti Ramdiah, Rusdi Hasan, dan Akhmad Sukri. 2022. "Constructing Digital Literacy Instrument and its Effect on College Students' Learning Outcomes." *International Journal of Instruction* 15(2):171–88. doi: 10.29333/iji.2022.15210a.
- Luthfia, Armia, Fitrie Handayani, Frederik Masri Gasa, Sari Ramadanty, dan Abdul Rauf Ridzua. 2023. "Navigating the Cyber Frontier: Youth Capabilities to Confront Dis/Misinformation with Digital Literacy and Digital Security." in *17th International Conference on Telecommunications (ConTEL)*.
- Marinda, Leny. 2020. "Piaget dan problematikanya." *Jurnal An-Nisa :Jurnal Kajian Perempuan & Keislaman* 13(1):116–52.

- Mu'min, Sitti Aisyah. 2013. "Teori Pengembangan Kognitif Jian Piaget." *Jurnal AL-Ta'dib* 6(1):89–99. doi: <http://dx.doi.org/10.31332/atdb.v6i1.292>.
- Mustofa, Mustofa, dan B. Heni Budiwati. 2019. "PROSES LITERASI DIGITAL TERHADAP ANAK: Tantangan Pendidikan di Zaman Now." *Pustakaloka* 11(1):114. doi: 10.21154/pustakaloka.v11i1.1619.
- Nopitasari, Banu Setyo Adi, Sugeng Riyanto, dan Rahayu Condro Murti. 2023. "Digital Literacy: Perceptions of Primary School Teacher Education Students." *Jurnal Ilmiah Sekolah Dasar* 7(1):27–34. doi: 10.23887/jisd.v7i1.48400.
- Nurhamidah, Didah. 2021. "Pengembangan Instrumen Penilaian Berbasis Media Nearpod dalam Mata Kuliah Bahasa Indonesia." *Jurnal Pendidikan Bahasa dan Sastra Indonesia* 80–90.
- OECD. 2019. "Programme for international student assessment (PISA) results from PISA 2018." *Oecd* 1–10.
- Owen, Sue, Pauline Hagel, Bernie Lingham, dan Daisy Tyson. 2016. "Digital literacy." (3). doi: <http://hdl.handle.net/10536/DRO/DU:30082926>.
- Patimah, Epi, dan Sumartini. 2022. "Kemandirian Belajar Peserta Didik Pada Pembelajaran Daring: Literature Review." *Edukatif: Pernal Ilmu Pendidikan* 4(1):993–1005. doi: <https://doi.org/10.31004/edukatif.v4i1.1970> Copyright.
- Pilgrim, Jodi, dan Sheri Vasinda. 2021. "Fake news and the 'wild wide web': A study of elementary students' reliability reasoning." *Societies* 11(4):1–12. doi: 10.3390/soc11040121.
- Pohan, Sutan Saribumi, dan Suparman. 2020. "Perspektif Literasi Digital Bagi Guru Sekolah Dasar." *SEUNEUBOK LADA: Jurnal ilmu-ilmu Sejarah, Sosial, Budaya dan Kependidikan* 7(2):164–78. doi: 10.33059/jsnbl.v7i2.2932.
- Prasetya, Dimas. 2022. "Peran Literasi Digital Keluarga dalam Upaya Mengurangi Kecanduan Gawai pada Anak." *Jurnal Syntax Admiration* 3(1):70–82. doi: <https://doi.org/10.46799/jsa.v3i1.377>.
- Pratiwi, Nani, dan Nola Pritanova. 2017. "Pengaruh Literasi Digital Terhadap Psikologis Anak Dan Remaja." *Semantik* 6(1):11. doi: 10.22460/semantik.v6i1p11.250.
- Priyono, Felani Henrianti, Anayanti Rahmawati, dan Adriani Rahma Pudyaningtyas. 2021. "Identifikasi Kemampuan Berpikir Simbolik Anak Usia 5-6 Tahun." *Jurnal Pendidikan Anak* 9(4):212–18. doi: 10.21831/jpa.v10i1.38741.
- Putri, Dini Palupi. 2018. "Pendidikan Karakter Pada Anak Sekolah Dasar Di Era Digital." *AR-RLAYAH: Jurnal Pendidikan Dasar* 2(1):37. doi: 10.29240/jpd.v2i1.439.
- Rahadi, Dedi Rianto. 2017. "Perilaku Pengguna Dan Informasi Hoax Di Media Sosial." *Jurnal Manajemen Dan Kewirausahaan* 5(1):58–70. doi: 10.26905/jmdk.v5i1.1342.
- Rainbolt, G. W., dan S. L. Dwyer. 2012. *Critical Thinking: The Art of Argument*. Boston: Wadsworth, Cengage Learning.
- Ratih, Rini Hariani, Sara Herlina, dan Yumaharani Yumaharani. 2020. "Hubungan Pengetahuan Ibu Tentang Kesehatan Reproduksi Remaja Dengan Upaya Mempersiapkan Masa Pubertas Pada Anak Di Sd Negeri 20 Pekanbaru." *JOMIS (Journal of Midwifery Science)* 4(2):12–17. doi:



10.36341/jomis.v4i2.1320.

- Rifauddin, Machsun, dan Arfin Nurma Halida. 2018. "Waspada Cybercrime dan Informasi Hoax pada Media Sosial Facebook." *Khazanah al-Hikmah: Jurnal Ilmu Perpustakaan, Informasi, dan Kearsipan* 6(2):98. doi: 10.24252/kah.v6i2a2.
- Riyani, Rizki, Syafdi Maizora, dan Hanifah Hanifah. 2017. "Uji Validitas Pengembangan Tes Untuk Mengukur Kemampuan Pemahaman Relasional Pada Materi Persamaan Kuadrat Siswa Kelas Viii Smp." *Jurnal Penelitian Pembelajaran Matematika Sekolah (JP2MS)* 1(1):60–65. doi: 10.33369/jp2ms.1.1.60-65.
- Romansyah, Khalimi. 2017. "Strategi Membaca Pemahaman yang Efektif dan Efisien." *DEIKSIS - Jurnal Pendidikan Bahasa dan Sastra Indonesia* 4(1):69–76. doi: <http://dx.doi.org/10.33603/deiksis.v4i1.407>.
- Rosyidah, Awal Nur Kholifatur, Ida Ermiana, Arif Widodo, Linda Feni Haryati, Setiani Novitasari, dan Ashar Pajarungi Anar. 2020. "Pelatihan dan Pendampingan Penulisan Karya Tulis Ilmiah untuk Guru SD 1 dan 45 Pemenang Lombok Utara." *Jurnal Pendidikan dan Pengabdian Masyarakat* 3(4):240–46.
- Salehudin, Mohammad, Marniah, dan Hariati. 2020. "Siswa SD Menggunakan Smartphone Dalam Pembelajaran Online." *IBTIDA': Media Komunikasi Hasil Penelitian Pendidikan Guru Madrasah Ibtidaiyah* 01(02):229–41.
- Santi, I. Ketut Loka, dan Rusgianto Heri Santosa. 2016. "Pengembangan Perangkat Pembelajaran Menggunakan Pendekatan Saintifik pada Materi Pokok Geometri Ruang SMP." *PYTHAGORAS: Jurnal Pendidikan Matematika* 11(1):35. doi: 10.21831/pg.v11i1.9673.
- Sari, Dewi Purnama, Heri Hadi Saputra, dan Lalu Hamdian Affandi. 2022. "Kolaborasi Guru Dan Orang Tua Dalam Mengatasi Kesulitan Belajar Siswa Di SDN 23 Ampenan." *Jurnal Ilmiah Mandala Education (JIME)* 8(1):421–26. doi: 10.36312/jime.v8i1.2678.
- Suwanto, S., dan Azrina Purba. 2021. "The Development of Multiple Intelligence Based Textbook." *Malikussaleh Journal of Mathematics Learning (MJML)* 4(1):34. doi: 10.29103/mjml.v4i1.3320.
- Syifa, Layyinatus, Eka Sari Setianingsih, dan Joko Sulianto. 2019. "Dampak Penggunaan Gadget terhadap Perkembangan Psikologi pada Anak Sekolah Dasar." *Jurnal Ilmiah Sekolah Dasar* 3(4):538. doi: 10.23887/jisd.v3i4.22310.
- Thiagarajan, S., D. S. Semmel, dan M. I. Semmel. 1974. *Instructional development for training teachers of exceptional children a sourcebook*. Minnesota: National Center for Improvement of Educational System.
- Wicaksono, Drajat, Yuliana Rakhmawati, dan Nikmah Suryandari. 2021. "P elatihan ' Cerdas Ber Internet ' Bagi Orang Tua di Desa Burneh Bangkalan." *PARTYA\_ABDI: Jurnal Pengabdian kepada Masyarakat* 5(2):137–43. doi: <https://doi.org/10.20956/pa.v5i2.7143>.
- Widiantari, Ni Kadek Kasi, I. Nengah Suparta, dan Sariyasa Sariyasa. 2022. "Meningkatkan Literasi Numerasi dan Pendidikan Karakter dengan E-Modul Bermuatan Etnomatematika di Era Pandemi COVID-19." *JIPM (Jurnal Ilmiah Pendidikan Matematika)* 10(2):331. doi: 10.25273/jipm.v10i2.10218.
- Winata, Anggun, Sri Cacik, dan Ifa Seftia W. 2018. "Kemampuan Awal Literasi Sains Peserta Didik Kelas V SDN Sidorejo I Tuban pada Materi Daur Air." *JTIEE* 2(1):58–64. doi:



<https://doi.org/10.29407/jpdn.v5i1.13068>.

Wulandari, Herni, Dessy Hasanah Siti Asiah, dan Meilanny Budiarti Santoso. 2021. "Pengawasan Orang Tua Terhadap Anak Usia Prasekolah Dalam Menggunakan Gawai." *Jurnal Penelitian dan Pengabdian Kepada Masyarakat (JPPM)* 2(2):118. doi: 10.24198/jppm.v2i2.32690.

Yuanita, Dessiana Irma, Hamdi Akhsan, dan Ketang Wiyono. 2015. "Pengembangan Panduan Praktikum Spektroskopi pada Mata Kuliah Fisika Modern." *Jurnal Inovasi dan Pembelajaran Fisika* 2(1):77–87. doi: <https://doi.org/10.36706/jipf.v2i1.2357>.