The effect of using digital variety media on distance learning on increasing digital literacy

A Muharam*, W Mustikaati, A Sanny, F Yani and K Wiriyanti
Universitas Pendidikan Indonesia Kampus Purwakarta, Purwakarta, Indonesia

*agusmuharam@upi.edu

Abstract. At present, distance learning, especially for low-grade students, is limited by the use of learning media that is not yet in accordance with the child's cognitive stages. This paper describes the results of using digital variety media in distance learning that are adjusted to the abilities and stages of children's digital literacy skills. This media is developed according to the easy learning stages consisting of comics, interactive videos and assessments that are integrated with learning materials. This study uses an experimental method of the relationship between the effect of using digital media on increasing children's digital literacy. Media that is incompatible with the abilities of low grade children can be avoided by teachers in the distance learning process because low grade children need the introduction of digital literacy skills that are in accordance with the child's cognitive thinking stages.

1. Introduction
In the Covid-19 situation has an impact on various aspects, one of which is the field of education, currently learning activities are transferred online to several schools in Indonesia and even the world. According to data from the United Nations Educational, Scientific and Cultural Organization (UNESCO), it was explained that around 290.5 million students were affected by school activities and their learning due to the Covid-19 pandemic. In addition, UNESCO on March 4 2020 suggested distance learning to keep the learning process carried out, including in Indonesia through Circular Number 3 of 2020 the Minister of Education and Culture issued a distance learning policy. Learning can be done anywhere. However, several things that must be considered regarding the cognitive stages of children, child psychology and adjustment of children's readiness and schools in implementing online learning that are always connected to technology are always faced with obstacles, especially for elementary school children who are still not capable of digital literacy and need guidance in online learning process.

However, that education in the era of Industrial Revolution 4.0 must be able to answer several problems through increasing abilities according to the needs of the times, one of which is digital literacy. In the 21st century, literacy is perceived as part of ‘a broader set of skills, ’sector-wide reforms,’ and ‘national development strategies’ that force educators to face the challenge of acquiring, maintaining, and improving their own literacy skills [1].

The profound effect of technology in our daily lives has expanded and transformed the way we assess information using basic reading and writing skills. In today’s knowledge-based global economy, a highly literate labor force needs higher proficiency levels of reading and writing, as well as higher capacity to use technology or ICT to adapt and master increasingly complex tasks and situations at work [1]. Therefore, world of education today requires every individual to live side by side with the Internet to
continue the process of learning activities. Humans use digital media for all purposes and to help solve everyday problems. Currently, digital programs based on the Internet of Things (IoT) are being intensified where every work we do is connected via an internet network with various kinds of digital media. This digital literacy skill must be implemented early on, as one of the basic abilities that must be nurtured since low class simplify today's distance learning process.

Distance learning which is always related to technology requires digital literacy skills. "Digital Reports 2020" released at the end of January 2020 stated that almost 64 percent of Indonesia's population is connected to the internet network, the number of internet users in Indonesia has reached 175.4 million people from the total population of Indonesia which amounts to around 272.1 million and compared to the year in 2019, the number of internet users in Indonesia increased by around 17 percent or 25 million users [2]. Based on data quoted from literacy support books, digital access for children in Indonesia to pornographic content per day reaches an average of 25 thousand people [3]. In addition, the behavior of using the internet that is not appropriate is shown by the spread of hoax information. So in the education sector and online learning activities are one of the efforts to introduce digital literacy in children. As where the Proposal by Nakayama that from all literature in e-learning indicates that not all students will be successful in learning online. This is because of the learning environment and students [4]. Means that teaching material can be visualized in various formats so that it is more interesting and dynamic so that it can motivate students to go further in the learning process [2]. Thus, of course, it becomes a big challenge for teachers in preparing learning skills and media assistance that are in accordance with the child's cognitive stages.

The government issued several policies such as freedom learning which is currently being implemented in universities which can be implemented in primary schools, especially in literacy improvement programs in distance learning activities which are still supervised by teachers. The government has also issued a literacy program regulation, one of which is the national literacy movement. However, in practice, teachers are still lacking in developing and engineering efforts to increase literacy creatively and innovatively, especially in conditions of distance learning. Several innovations in the learning process have been carried out, but with this distance learning, guidance should be needed as a first step in the introduction of digital literacy.

The root of the problem is the low digital literacy skills of the Indonesian people, especially low grade elementary school students because digital-based learning in elementary schools is not necessarily a habit and culture and teachers have not been able to develop the quality of digital literacy for students in schools, especially seeing the current situation learning must be done remotely. Thus a breakthrough is needed in increasing literacy, especially digital literacy through Digital Variety learning media. This media is integrated with SD thematic material which is packaged in the form of digital comic stories and is equipped with interactive video visualizations that can be accessed by web barcode scanning online on digital postcards. The use of this media is packaged with scenarios that suit the abilities of low-grade students, students can follow several instructions in stages on each section connected to the Google Form link, consisting of sections containing personal data, comics, interactive videos and assessment. Therefore, the author will examine "The Effect of Using Digital Variety Media on distance learning on Increasing Digital Literacy in Class 2 Students of SDIT Cendekia.

2. Material and methods

This paper requires data on the use of Digital Variety and its relation to the assessment of indicators for achieving digital literacy. The type of method used is an experiment with a research design looking for the effect of using digital media on increasing digital literacy.

The sample collection technique uses purposive sampling, which has determined criteria that can be sampled, namely, students in grade 2 who are taking distance learning activities and have distance learning facilities such as devices and internet networks. The author took a sample at SDIT Cendekia who was implementing distance learning and met the criteria.

Data analysis used a simple regression analysis test where previously tested classical assumptions, namely the linearity test, normality test and heteroscedasticity test, then tested the relationship between
the use of digital media to increase digital literacy, whether there was an effect or no effect. The data used in this study is a questionnaire in the form of questions about the use of digital media and questions in the form of assessments of increasing digital literacy seen from indicators of digital literacy achievement in the form of questions.

3. Results

Indonesia is one of the countries affected by Covid-19 with 149,408 positive cases as of August 21, 2020 with more victims, education in Indonesia seeks to answer the demands of changing learning from offline to online or known as distance learning. The implementation of distance learning is identical to online learning, this refers to the notion of teaching learning which is defined as teaching and learning activities carried out through the use of technology and structured information in which there is communication/relationship between students and students. students and teachers regularly, substantive, and support [5]. However, in its implementation, the learning process activities that are transferred online are constrained by several problems. among others, the virtual infrastructure is not ready where they still have difficulty accessing the internet and the limited electronic devices they have. Because of these various limitations, the selection of the right tools and the use of the right methods must be a support for learning to be as effective as possible. So that in a situation like this the teacher needs to understand the components of distance learning, the use of media and various learning platforms, while in terms of students and parents need to improve independent learning and parents are expected to be able to understand the nature of distance learning and its position as a monitor for their children during distance learning.

The education system in Indonesia has now started to adopt a technology-based learning system, this is supported by several studies on the development of learning media over the last three years [5]. However, learning designs that have been transformed into technology in their application are less than optimal, due to the unpreparedness of various elements. The government has made efforts to implement distance learning, (Kemdikbud) has prepared a number of supports to facilitate the process. Kemdikbud it self develops a portal and android based distance learning application "Rumah Belajar". This portal can be accessed at learning.kemdikbud.go.id. Some of the excellent features that can be accessed by students and teachers include Learning Resources, Digital Classrooms, Virtual Laboratories, and Question Banks. The Learning Center can be used by students and teachers of Early Childhood Education, Elementary Schools, Junior High Schools, Senior High Schools and Vocational Schools or equivalent. The Ministry of Education and Culture has partnered with seven online learning platforms, namely Smart Class, Ruangguru, Sekolahmu, Zenius, Quipper, Google Indonesia, and Microsoft. Each platform will provide facilities that can be accessed by the public and free of charge by the Ministry of Education and Culture (2020) as well as through national education TV shows, special curricula through the provision of more specific modules, and learning through various platforms such as video conferencing, google classrooms etc. However, learning media assistance is still needed that will help students, especially low-class students who need digital literacy in accordance with children's cognitive development so that learning can be carried out properly and independently. This kind of thing is a reflection that policy making must be aligned with proper implementation in the field Digital variety media based on improving digital literacy for grade II elementary school students. As a result, this digital variety media has not had a significant effect on increasing children's digital literacy. The use of digital media uses the results of questionnaire data filled out by parents regarding the use of digital media and increasing digital literacy, seen from the assessment of digital media which refers to indicators of increasing digital literacy according to Douglas A.J Belshaw in his thesis "What is Digital Literacy?" said there are 8 essential elements for developing digital literacy, in this case only taking a few points, namely culture means understanding the various contexts of digital and cognitive users, which means the thinking power of assessing content [6]. This digital variety media adopts Ausubel's theory. According to Ausubel meaningful learning is a process of linking new information to relevant concepts contained in a person's cognitive structure [7]. Cognitive structures include facts, concepts, and generalizations that students have learned and remembered. This
digital variety of learning media emphasizes meaningful learning with concepts that students have previously understood about students' digital initial knowledge, with this media student become accustomed to using gadgets to become fun learning (figure 1).

![Figure 1. The flow of data retrieval.](image)

Table 1. A table coefficients¹.

| Model          | Unstandardized Coefficients | Standardized Coefficients | t   | Sig. |
|----------------|-----------------------------|----------------------------|-----|------|
|                | B                           | Std. Error                 | Beta|      |
| Media Users    | 7.116                       | 6.402                      | 1.112| 0.282|
| Digital variety| -0.177                      | 0.216                      | -0.195| -0.819| 0.424|

¹Dependent variable: Increasing digital literacy

Table 2. A table coefficients².

| Model          | Unstandardized Coefficients | Standardized Coefficients | t   | Sig. |
|----------------|-----------------------------|----------------------------|-----|------|
|                | B                           | Std. Error                 | Beta|      |
| Media Users    | 41.092                      | 9.461                      | 4.343| 0.000|
| Digital variety| -0.328                      | 0.319                      | -0.242| -1.030| 0.317|

²Dependent Variable: RES2

Table 3. A table model summary.

| Model | R  | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|----|----------|-------------------|----------------------------|
| 1     | .242²| 0.059    | 0.003             | 2.74834                    |

Predictors: (Constant), Use of Digital Variety Media

The effect of using digital variety media on the increase in digital literacy, the significance value through simple linear regression analysis test and simple linear regression equation \( Y = a + bX \), namely Increased digital literacy \( = 41.092 + -0.328 \). The use of digital variety media, states that every 1% increase in the value of media use variety of digital, then the value of increasing digital literacy increases by \(-0.328\). The regression coefficient is negative, so it can be said that the direction of the influence of variable X on Y is negative. Judging from the significance value of 0.317 \( > 0.05 \), it means that it has no influence on the variable of increasing digital literacy, likewise if based on the t value: it is known that the value
of Tcount is -0.18. T table 2.10982, so it can be concluded that the variable use of digital media does not affect variable Digital literacy enhancement.

\[ T_{table} = \frac{a/2}{(n-k-1)} = \frac{0.05/2}{19-1-1} = \frac{0.025}{17} = 2.10982 \]

Variety of digital, but there are also other factors that will influence the increase in digital literacy. The habit and education factor in the family is one of the things that will affect the quality of digital literacy, the readiness of parents who are too sudden in distance learning causes various unprepared responses to guide children in learning, in addition to virtual infrastructure access that must be evenly distributed and affordable for all. Circles in learning activities must be accustomed to using tools in the form of learning media that will make it easier for students to learn independently and get to know digital literacy through the use of positive devices [5]. We must approach the digital transformation of education as one of our main concerns and consider how we can empower children to manage and master their digital future during primary education.

4. Conclusion

Education during the current Covid-19 period requires learning to be shifted from offline to online activities, various learning processes are carried out through various platforms to reduce the spread of Covid-19 transmission. All efforts made in distance learning require aids in the form of learning media that are appropriate to the child's stages so that they can also improve their ability to increase digital literacy, given the importance of increasing digital literacy today, especially in low grade children. Digital variety media is one of the learning media aids in the current distance learning process. However, this digital variety of learning media has less influence on increasing digital literacy, because in the process of increasing digital literacy it must be supported by various elements such as starting from family education, habituation and fulfilling access to virtual facilities. In this case, considering that the changes that must be made are considered very fast, so the adaptation process in using this technology still requires adjustments, including the use of this digital variety media. Hopefully this digital variety media will be refined later so that its use can result in a significant increase in digital literacy.

References

[1] Cai J and Gut D 2020 Literacy and Digital Problem-solving Skills in the 21st Century: What PIAAC Says about Educators in the United States, Canada, Finland and Japan Teach. Educ. 31 177–208
[2] Pakpahan R and Fitriani Y 2020 Analisa pemanfaatan teknologi informasi dalam pembelajaran jarak jauh di tengah pandemi virus corona covid-19 J. Inf. Syst. Applied, Manag. Account. Res. 4 30–6
[3] Suhendar D and Nasrullah R 2017 Materi Pendukung Gerakan Literasi Nasional (Kementrian Pendidikan dan Kebudayaan)
[4] Dewi W A F 2020 Dampak Covid-19 terhadap implementasi pembelajaran daring di Sekolah Dasar Edukatif J. Ilmu Pendidik. 2 55–61
[5] Churiyah M, Sholikhan S, Filianti F and Sakdiyyah D A 2020 Indonesia education readiness conducting distance learning in Covid-19 pandemic situation Int. J. Multicult. Multireligious Underst. 7 491–507
[6] Belshaw D 2011 What is’ digital literacy’ A pragmatic Invest. Durham, UK Durham Univ.
[7] Ausubel D P 2000 The adquisition and retention of knowledge. Dortrecht, Netherland Kluwer 10 978–94