

The Effect Of Cognitive Competency On Early Adolescent Digital Literation Skills

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Accepted: 3 Januari 2021	Reviewed: 5 Januari, 2021	Published: 20 Februari 2021
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Abstract : This study aims to see the effect of cognitive competency levels C1-Knowledge, C2-Comprehension, and C3-Application on digital literacy skills in early adolescents. In this study cognitive competence is limited to three aspects, such as knowledge, understanding, and application. The research method used a survey by looking at the effect using simple regression analysis. The results showed that the cognitive competency level of knowledge in digital literacy skills was in the top position of 97.0%, the level of application cognitive competence in digital literacy skills was in the second position of 89.0%, the level of cognitive competence in understanding digital literacy skills was in the third position of 80.3%. The conclusion in this study is that there is an effect of cognitive competence on digital literacy skills of early adolescents with a knowledge level of C1-Knowledge 97.0% It shows the concept of students' digital literacy skills in remembering and storing information very well, understanding C2-Understanding 80.3% Shows the concept of students 'digital literacy skills in understanding and choosing information well, C3-Application 89.0% Shows the concept of students' digital literacy skills in applying (using) information well.

Keywords : Cognitive competence, digital literacy skills, google

INTRODUCTION

In the 21st century revolution, it is famous for industry 4.0. with the trend of the technological revolution or digital revolution. Briefly interpreting industry 4.0 is combining automatic technology with cyber technology ¹.

The characteristics of the 4.0 industrial revolution include digitization, optimization and customization of production, automation and adaptation, human machine interaction, value added

¹ Syamsuar Syamsuar and Reflianto Reflianto, "Pendidikan Dan Tantangan Pembelajaran Berbasis Teknologi Informasi Di Era Revolusi Industri 4.0," *E-Tech: Jurnal Ilmiah Teknologi Pendidikan* 6, no. 2 (2019).

services and businesses, automatic data exchange and communication, and integrating the use of internet technology²

Internet technology such as the google search engine, youtube, and social media (facebook, instagram, whatsapp) has entered media convergence where there is media integration which makes media use more sophisticated and easy³.

It was the emergence of the internet that triggered an explosion of information. The openness of information in the rapid development of technology means that messages can be delivered quickly in seconds, an information can be distributed directly throughout the world.

The Ministry of Communication and Information, in an international seminar stated that the use of digital media among children and adolescents in Indonesia, also stated that from the research conducted on children and adolescents aged 10-19 years, there were at least 30 million Indonesian children and adolescents. using the internet and making digital media their main choice of communication channels.

Based on the results of a survey conducted by the European Union Kids Online and published by the European Commission's Safer Internet Program, it is stated that the highest activities carried out by children and adolescents are: School assignments (92%), Playing games (83%), Seeing video clips (75%), Social networks (71%).

APJII (2016) stated that the student group numbered 8.3 million people (6.3%). This data shows that as many as 6.3% of students use the internet. This number is not a small number considering that not all students have sufficient competence in using digital media.

Then came the term digital literacy skills or also known as digital information literacy. In general, literacy is the ability to read, write and listen using conventional media such as books, newspapers, magazines, television and radio. Then the rapid development of technology and information shifts the existence of conventional media to digital media, so literacy develops into digital literacy.

Digital literacy or also known as digital information literacy is the skill of reading, writing and listening using digital media to seek information knowledge. (Masitoh, 2018) (Ferrés & Masanet, 2018) states that if it is related to learning, digital media that is often used by students, especially early adolescents, is the Google search engine, through the Google search engine, early adolescents can read and listen to the knowledge of information obtained to increase knowledge of information. Regarding learning, the Google search engine digital media can help optimize the quality of early adolescent information knowledge. Knowledge to obtain information in early adolescents aged 11-12 years enters the concrete operational stage, Piaget stated that this concrete operational stage is characterized by the development of a system of thought based on logical rules.

These concrete skills refer to the ability to use tools starting from perception, readiness, imitation, real, can be seen and heard, at this concrete operational stage it can be seen that early adolescent digital literacy skills in using digital media to seek information knowledge, to the stage

² Iswan Iswan and Herwina Bahar, "Penguatan Pendidikan Karakter Perspektif Islam Dalam Era Millenial IR. 4.0," in *Prosiding Seminar Nasional Pendidikan*, vol. 1, 2018.

³ Qory Qurratun A'yuni, "Literasi Digital Remaja Di Kota Surabaya: Studi Deskriptif Tentang Tingkat Kompetensi Literasi Digital Pada Remaja Smp, Sma Dan Mahasiswa Di Kota Surabaya" (UNIVERSITAS AIRLANGGA, 2015).

of presenting, preparing, imitating what is seen and heard in searching for knowledge of information on digital media without considering critically the good and bad knowledge of the information for consumption.

In this study, the author aims to determine the effect of cognitive competence on digital literacy skills of early adolescents, and the levels of cognitive competence C1, C2, and C3 which are the highest and affect digital literacy skills. The reason the researchers conducted this research was due to the rapid access to the internet among students and not all students had sufficient competence in using digital media. In previous research, digital literacy was carried out at the level of adolescent digital literacy competence in the city of Surabaya based on aspects of internet search, hypertext guidance, evaluation of information content and preparation of knowledge.

The solution to the problems raised in this study can be solved by the help of the teacher so that early adolescents are told more effective ways to filter information on their use using keywords, and for parents, play a role in accompanying and limiting then checking the list of information search history on early adolescent smart phones. to control usage and direct early adolescents to use an information search engine (google) with appropriate needs, namely related to learning and adding positive insights.

Cognitive Competency

1. Competence

competence is a characteristic of the work ability of each individual which includes aspects of knowledge, skills and work attitudes in a job related to performance effectiveness which can be seen from the style of action, behavior and thinking⁴

2. Cognitive Competence

competence or cognitive ability is the ability of the brain's thinking process to collect knowledge and information through one's own experience by regulating cognitive activities including the use of existing concepts and rules. The cognitive domain involves knowledge and intellectual skills. There are six main categories of cognitive processes, ranging from the simplest to the most complex, that is the cognitive bloom taxonomy (Benyamin, 2011).

Benjamin S Bloom has developed a "taxonomy" for the cognitive domain. Cognitive taxonomy is a method of making a sequence of thoughts from the basic stage towards a higher level of mental activity, with the following six stages:

- 1) Knowledge (knowledge) is a person's ability to recall (recall) or recognize again about names, terms, ideas, symptoms, formulas and so on, without expecting the ability to use them. This knowledge or memory is the lowest thought process.
- 2) Comprehension (comprehension) is a person's ability to understand or understand something after something is known and remembered. In other words, understanding is knowing about something and being able to see it from various angles. Students said to understand something if they can provide an explanation or give a more detailed description of it using their own

⁴ Michael Eraut, "Concepts of Competence," *Journal of Interprofessional Care* 12, no. 2 (1998): 127-139, <http://dx.doi.org/10.3109/13561829809014100>; Françoise Delamare Le Deist and Jonathan Winterton, "What Is Competence?," *Human Resource Development International* 8, no. 1 (2005): 27-46, <http://dx.doi.org/10.1080/1367886042000338227>.

words. Comprehension is a level of thinking ability which is one level higher than memory or memorization.

- 3) Application is a person's ability to apply or use general ideas, procedures or methods, principles, formulas, theories and so on, in new and concrete situations. This application or application is a thought process at a higher level of understanding.

Digital Literacy Skills

1. Literacy

literacy is the ability to read and write then develop along with the rapid development of technology into multiliteration where multiliteration is the skill of using various ways to express and understand information using symbols and multimedia forms on digital devices ⁵.

After a general introduction to the basic concept of 'literacy', which has been expanded to include newer forms of literacy, it is more suitable for complex information environments. Some of them, for example libraries, media and computer literature, are mostly based on general concept skills, such as information literacy and digital literacy which are based on knowledge of digital literacy skills ⁶

2. Digital Literacy Skills

Digital literacy can be defined as literacy or the ability to read, write and listen to text with the ability to use digital ⁷.

Another opinion states that digital literacy skills are not only the ability to read and write but the ability to listen, read, see, speak, write, create and reflect increasingly complex and sophisticated information by combining writing and speech in an informational text ⁸. Digital literacy is very important to increase effectiveness or more efficient performance in learning digital literacy skills (Emerald Group Publishing Limited, 2010) ⁹.

⁵ Pirjo Kulju et al., "A Review of Multiliteracies Pedagogy in Primary Classrooms," *Language and Literacy* 20, no. 2 (2018): 80–101, <http://dx.doi.org/10.20360/langandlit29333>; Robyn Henderson, "Classroom Pedagogies, Digital Literacies and the Home-School Digital Divide," *International Journal of Pedagogies and Learning* 6, no. 2 (2011): 152–161, <http://dx.doi.org/10.5172/ijpl.2011.152>.

⁶ David Bawden, "Information and Digital Literacies: A Review of Concepts," *Journal of Documentation* 57, no. 2 (2001): 218–259, <http://dx.doi.org/10.1108/eum000000007083>.

⁷ Michelle M Neumann, Glenn Finger, and David L Neumann, "A Conceptual Framework for Emergent Digital Literacy," *Early Childhood Education Journal* 45, no. 4 (2016): 471–479, <http://dx.doi.org/10.1007/s10643-016-0792-z>; David C Caverly et al., "Identifying Digital Literacies to Build Academic Literacies," *Journal of College Reading and Learning* 49, no. 3 (2019): 170–205, <http://dx.doi.org/10.1080/10790195.2019.1638218>; Julian McDougall, Mark Readman, and Philip Wilkinson, "The Uses of (Digital) Literacy," *Learning, Media and Technology* 43, no. 3 (2018): 263–279, <http://dx.doi.org/10.1080/17439884.2018.1462206>; Julian McDougall et al., "Digital Literacy, Fake News and Education / Alfabetización Digital, Fake News y Educación," *Cultura y Educación* 31, no. 2 (2019): 203–212, <http://dx.doi.org/10.1080/11356405.2019.1603632>.

⁸ Maureen Walsh, "Multiliteracies, Multimodality, New Literacies and What Do These Mean for Literacy Education?," *International Perspectives on Inclusive Education* (Emerald Publishing Limited, 2017), <http://dx.doi.org/10.1108/s1479-36362017000011002>.

⁹ Sedat Akayoglu et al., "Digital Literacy Practices of Turkish Pre-Service EFL Teachers," *Australasian Journal of Educational Technology* (2020), <http://dx.doi.org/10.14742/ajet.4711>; Walsh, "Multiliteracies, Multimodality, New Literacies and What Do These Mean for Literacy Education?"; *The Meanings of Dress, The Meanings of Dress*, 2019; Irena Y Maureen, Hans van der Meij, and Ton de Jong, "Supporting Literacy

Digital literacy skills can link critical literacy to digital use activities so that students are ready to interact in the global world in using digital tools to find information outside academics¹⁰.

Digital literacy is used in education, where elementary school students, especially early adolescents, use digital to foster meaningful experiences with all students in all environments in seeking information both in the scope of school, class, and home¹¹.

Opportunities to teach and learn with new literacy help early adolescents bridge technical skill gaps, and benefit social relationships in digital communities and bridge digital literacy experiences for elementary students to be more critical of existing information within the school environment and outside of school¹². So to present the necessary skills the concept of digital literacy skills put forward¹³ concerns the following aspects:

- a. Knowledge assembly, that is the ability to build information from various reliable sources.
- b. The ability to present information including critical thinking in understanding information with awareness of the validity and completeness of sources from the internet
- c. Ability to read and understand non-sequential and dynamic information material
- d. Awareness of the importance of conventional media and linking it to networked media (internet)
- e. Awareness of access to networks of people who can be used as a source of referrals and help
- f. Use filters for incoming information

and Digital Literacy Development in Early Childhood Education Using Storytelling Activities," *International Journal of Early Childhood* 50, no. 3 (2018): 371–389, <http://dx.doi.org/10.1007/s13158-018-0230-z>; Neumann, Finger, and Neumann, "A Conceptual Framework for Emergent Digital Literacy."

¹⁰ Natalie Amgott, "Critical Literacy in #DigitalActivism: Collaborative Choice and Action," *The International Journal of Information and Learning Technology* 35, no. 5 (2018): 329–341, <http://dx.doi.org/10.1108/ijilt-05-2018-0060>; Michele Garabedian Stork et al., "Embracing the Power of Digital in Literacy Education: Evaluating the Effectiveness of Digital Activities," *Journal of Formative Design in Learning* 2, no. 2 (2018): 82–101, <http://dx.doi.org/10.1007/s41686-018-0022-8>; Akayoglu et al., "Digital Literacy Practices of Turkish Pre-Service EFL Teachers"; Katherine Cook et al., "Teaching Open Science: Published Data and Digital Literacy in Archaeology Classrooms," *Advances in Archaeological Practice* 6, no. 2 (2018): 144–156, <http://dx.doi.org/10.1017/aap.2018.5>.

¹¹ Chrystine Mitchell and Jennifer Dandridge Turner, "Only One iPad: Preparing Pre-Service Teachers to Teach Digital Literacies in Under-Resourced Elementary Schools," *Best Practices in Teaching Digital Literacies* (Emerald Publishing Limited, 2018), <http://dx.doi.org/10.1108/s2048-045820180000009004>; Caverly et al., "Identifying Digital Literacies to Build Academic Literacies"; McDougall et al., "Digital Literacy, Fake News and Education / Alfabetización Digital, Fake News y Educación"; Nisaul Barokati Seliro Wangi, M Hafidh Nashrullah, and Muh Barid Nizarudin Wajdi, "Digital Era's Education and Application in Higher Education," *EDUTECH: Journal of Education And Technology* 1, no. 2 (2018): 119–128.

¹² Jessica S Mitchell, Rachael F Thompson, and Rebecca S Anderson, "Understanding a Digital Writing Cycle: Barriers, Bridges, and Outcomes in Two Second-Grade Classrooms," *Literacy Research, Practice and Evaluation* (Emerald Group Publishing Limited, 2016), <http://dx.doi.org/10.1108/s2048-045820160000007009>; Joy Myers and Melissa Adams-Budde, "Teaching Literacy in the Digital Age: Inspiration for All Levels and Literacies," *International Review of Education* 63, no. 5 (2017): 769–772, <http://dx.doi.org/10.1007/s11159-017-9649-y>; Neumann, Finger, and Neumann, "A Conceptual Framework for Emergent Digital Literacy."

¹³ Bawden, "Information and Digital Literacies: A Review of Concepts."

g. Feel comfortable and have access to communicate and publish information.

If you look at the opinion of Bawden¹⁴ above, digital literacy is more associated with technical skills in accessing, arranging, disseminating information.

METHODS

The research method using a survey was carried out in grade V elementary schools at three schools, such as SDN Pondok Betung 01, SDN Pondok Betung 02, and SDN Pondok Betung 04 with a sample of 125 students using simple random sampling to fill out a questionnaire (questionnaire), the researchers made numbers, on The number is written in two colors, such as red and black, then the author shuffles and the students take a random number (random) on the number provided by the researcher.

RESULT AND DISCUSSION

Based on the research findings, the cognitive competency levels of C1, C2, and C3 that have the most influence on digital literacy skills can be seen in the following percentage diagram:

Illustrations

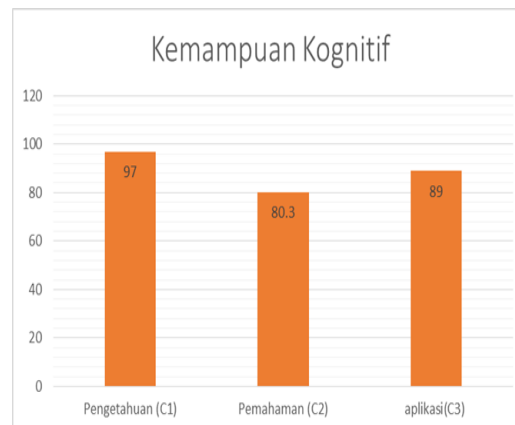


Fig 1. (a) Percentage of Competency / Cognitive Ability Bar Charts on Digital Literacy Skills

The level of cognitive competence towards early adolescent digital literacy skills with a knowledge level of C1 of 97.0% at this stage shows the concept of digital literacy skills of early adolescents in remembering and storing information is very good, understanding C2 is 80.3%, this stage shows the concept of digital literacy skills Early adolescents understand and choose good information, the C3 application is 89.0%, indicating that the concept of early adolescent digital literacy skills in the application (use) of information is quite good.

¹⁴ Ibid.

Normal P-P Plot of Regression Standardized Residual

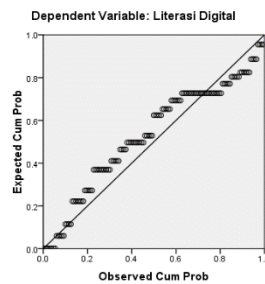


Fig 2. (b) simple regression curve

Tables

Table 1 Reliability Test and Prerequisite Analysis of the Effect of Cognitive Competence on Digital Literacy Skills

Reliability > 0.7	Normality Sig > 0.05 (Normal)	Homogeneity Sig > 0.05 (Homogeneous)	Simple Regression
The result of the reliability test on the effect of cognitive competence on digital literacy skills in early adolescents is 0.754	The results of the normality test using Kolmogorov Smirnov obtained results 0.11 significance value > 0.05 so that 0.11 > 0.05, it can be concluded that the residual value is normally distributed	The results of the normality test using the levene test resulted in a significant value of 0.76 > 0.05 so that 0.76 > 0.05, it was concluded that all variables were homogeneous.	Based on the significance value of the coefficients table, it is obtained a significance value of 0.000 less than 0.05 (0,000 < 0.05) so it can be concluded that the cognitive competency variable (X) affects digital literacy skills (Y). The correlation value / relationship (R) is 0.990. From this output, the coefficient of determination (R square) is 0.979.

CONCLUSION

Conclusions based on the research conducted

1. Seeing the significance value of 0.000 < 0.05 indicates cognitive competence C1, C2, C3, affects digital literacy skills in early adolescents

2. Based on the R Square value of cognitive competence C1, C2, C3, on digital literacy skills has an influence of 97.9% indicating that the independent variable cognitive competence has a big or strong effect on the dependent variable of digital literacy skills.
3. The level of cognitive competence that has the most influence on digital literacy skills in early adolescents is the cognitive competence of knowledge C1 with an R Square value of 97.0%

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