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DIGITAL COMPETENCE OF PRESCHOOL STUDENTS USING EDUCATIONAL APP AS LEARNING MEDIA

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Abstract

This research aims to explore the digital competence of preschool students using the Sekolah Enuma app on tablets as a learning media. The study focuses on the operational skills demonstrated by the children while interacting with the app, providing insights into their ability to navigate and utilize digital technologies effectively. The research employed a qualitative approach, where data was collected through observations, interviews, and focus group discussion. The findings indicate that preschool students exhibit a substantial level of digital competence when using the Sekolah Enuma app. Most students were able to perform basic operational tasks such as swiping screens, tracing shapes, and using learning apps independently. However, tasks requiring reading skills or more complex operations, such as entering passwords or adjusting device settings, posed challenges for some students, necessitating teacher assistance. The study aligns with previous findings that young children can readily acquire touch-screen technology skills, which in turn support their emergent literacy by enabling them to interpret and interact with digital content through icons, symbols, and printed words. In conclusion, preschool students demonstrate good digital competence with the use of the Sekolah Enuma app, particularly in basic operational skills. This early proficiency not only facilitates their interaction with digital technologies but also enhances their emergent literacy skills.

Keywords: *digital competence, preschool, educational app, learning media*

INTRODUCTION

Along with the development of technology, learning is not only done face-to-face with conventional methods, but utilizing existing digital communication technology to make the learning process more effective. Learning videos, video conferencing and digital learning platforms or applications are options in digital learning. Digital learning experiences are generally defined as experiences that depend on the internet and digital devices such as laptops, smartphones, computers that are done synchronously or asynchronously. In the digital learning experience using various technology platforms. One of them is through an educational application that is operated from a tablet that can be used by preschool children.

Enuma School is an educational application developed by Enuma Inc, a company that focuses on developing educational applications, which have been used in various parts of the world. This application is an example of the form of utilization of digital learning, especially education at the early childhood and elementary school levels. First released in 2012 in Berkeley, California, in collaboration with The Head Foundation Singapore, this application is specifically designed to focus on literacy and numeracy skills for children through educational content and digital-based games, which stimulate each child's abilities including visual, audio and kinesthetic.

Enuma School is a recommended platform for beginner learners, due to its easy access and interactive approach, offering hundreds or even thousands of learning activities and quizzes to attract children's attention. Currently, Enuma School has begun

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to be implemented in Indonesia, but the adoption rate is still not as large as other learning applications that have been known for a long time. Although its distribution is not yet evenly distributed, this application has begun to be involved in several educational programs supported by the government and non-governmental organizations, especially in areas with limited educational infrastructure.

A study conducted by Hijriyani and Astuti (2020) on the use of gadgets in early childhood in the era of the 4.0 revolution showed that the use of gadgets can support the learning process and increase children's interest in learning. Children who are accompanied by the use of gadgets, especially to watch educational animations and play educational games, show an increase in critical thinking skills, imagination, and hand-eye coordination. This is in line with other research conducted in six elementary schools by van Deursen et al. (2014) in the Netherlands also showed that the use of tablets in learning can increase student motivation and concentration. This study revealed that factors such as ease of use, usefulness, and independence have a positive effect on students' attitudes towards tablets in the classroom. In addition, the use of gadgets also plays a role in shaping digital literacy and digital skills in children. Children will become familiar with technology and begin to master basic skills in operating gadgets, such as running applications and recognizing symbols on the screen. This helps them develop basic digital skills that are very important for the future, especially in an era that is increasingly dependent on technology, thus becoming the initial foundation for their digital literacy in the future.

RESEARCH OBJECTIVE

Based on the explanation provided above, this research is conducted with the aim to explore the digital competence of preschool students using the educational app Sekolah Enuma run on tablets as a learning media.

LITERATURE REVIEW

1. Educational Communication

According to Nirbita and Widyaningrum (2022), educational communication is a field of study that focuses on the application of communication theories and concepts in the field of education with the goal of improving the quality of education and learning across the board. According to Inah (2013), the objective of educational communication is to influence the behavior of the target in a manner that is more qualified and in a direction that is positive.

The informative function, the educational function, and the persuasive function are the three functions that are included beneath the umbrella of educational communication. Communication serves an informative function in which it provides information, data, or facts that are helpful for human life. Through communication, the educator is able to convey to students what it is that they wish to convey to them. The purpose of the educational function is to educate the community, educate everyone toward achieving independent maturity, and make people know a lot because they hear, read, and communicate a lot. On the other hand, the persuasive function is that communication is able to convince others, in this case the participants themselves, to behave in accordance with what the communicator wants, which is education. So that it can raise the understanding and awareness of the communicant, both in terms of providing motivation or guidance, that what we convey will bring about a change in attitude, but the change is of one's own will and not something that is forced upon them, so that motivation comes from within rather than coming from the outside (Aqsar, 2018).

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2. Digital Learning Media

Learning media is an inseparable component of educational communication. Learning media can be defined as something that can be used as a means to convey messages and information on learning materials so that students will experience a learning process in order to achieve the goals of learning or education itself (Mawardi, 2017). Along with the development of technology, learning media has also developed into a digital-based one. Digital learning media is a computer-based application or tool that is used to facilitate the learning process. Digital learning media has an important role in increasing student motivation and learning outcomes, and enables the use of technology that is in accordance with the times (Junaidah & Qadrianti, 2023). The use of digital-based learning media that is informal and prioritizes active participation of students is recommended to ensure the effectiveness of learning activities (Meliyani et al., 2022).

Digital learning media includes various formats designed to enhance the learning experience. According to Martin and Betrus (2019), types of digital-based learning media include:

a. Audio and Visual Media: This includes educational videos, documentaries, slides, and audiobooks. They are especially useful for visual and auditory learners, helping to clarify complex concepts.
b. Digital Media: This broad category includes e-books, interactive e-learning platforms, and educational apps. They offer easy access to learning materials from anywhere and at any time.
c. Instructional simulations and games: These interactive tools engage learners in an immersive environment, making complex subjects more approachable and enjoyable.
d. Online Learning: Web-based courses and virtual classrooms provide flexibility and a variety of resources for learners around the world.
e. Mobile Learning: Learning via mobile devices allows education to take place at any time, with mobile-friendly apps and content available.

Each type of digital learning media has its own advantages and can cater to different learning styles and needs. The choice of media often depends on the subject matter, learning objectives, and preferences of educators and learners.

One type of digital media in the form of an educational application is Sekolah Enuma. Sekolah Enuma is a development of the Kitkit School application, and was first officially present in Indonesia in 2020. This application was created by Enuma, Inc., a technology company focused on education and located in the United States. Sekolah Enuma aims to provide quality education for children in various parts of the world, especially in areas with limited access to formal education, by utilizing digital technology. The Sekolah Enuma application has been internationally recognized in the field of educational technology, such as the Global Learning XPRIZE award for its contribution to innovative digital education.

The Sekolah Enuma application consists of three subjects, namely English, Mathematics and Indonesian (Literacy) which have been adapted to the education curriculum in Indonesia. So this application is specifically designed to help Indonesian early childhood and elementary school children improve their literacy and numeracy skills through various interesting learning activities, such as games, videos, and story books to help children develop basic skills in reading, writing, arithmetic, and

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English. By adopting this game concept, it helps attract and increase children's motivation in learning. Children are invited to participate in interactive activities that are tailored to their developmental stage. One of the advantages of Sekolah Enuma is its design that allows children to learn on their own without requiring constant supervision from teachers or parents. A unique feature of Enuma School is its ability to be accessed offline, so children can learn anytime and anywhere without the need for an internet connection.

3. Digital Competence

Digital competence refers to the set of skills, knowledge, and attitudes that enable individuals to effectively and critically use digital technologies for information, communication, problem-solving, and content creation (Ferrari, 2013). In the context of early childhood education, digital competence includes basic operational skills, such as turning on a device and navigating simple interfaces, and also more complex abilities like understanding digital content, engaging in digital communication, and recognizing the importance of online safety and privacy (Chaudron, 2015).

Digital competence covers various dimensions, including the ability to access and utilize digital technology, interact with digital content, and disseminate information critically. Digital literacy is a key aspect of digital competence, as it involves not only traditional skills related to reading and writing, but also additional skills related to the use of various digital. Digital competence includes several forms, namely information, communication, educational content creation, security, and educational problem solving (Blyznyuk, 2019). In the information aspect, educators are expected to have data literacy skills which include the ability to search, select, sort, evaluate, and manage information that is appropriate for learning. In the communication aspect, educators must be able to interact, engage, share, and collaborate through digital media and technology. Meanwhile, in terms of educational content creation, the ability of educators to create digital content, such as learning applications, interactive presentations, and learning animations. The security aspect emphasizes the importance of educators providing protection against the impact of technology on students during the learning process. Finally, educational problem solving involves the ability of educators to overcome technical problems, identify technological needs, understand the weaknesses of digital technology, and use technology creatively in learning. Therefore, both educators and students are expected to understand the benefits and risks of digital learning and be able to maximize the use of technology in the context of education (Prayogi, 2020). The indicators of digital competence where various skills children use when interacting with tablets are explored. Marsh (2016) identifies key competencies that children develop in regard to digital competence, which include: 1) Operational skills such as swiping screen, tracing shapes with fingers, open apps, drag items across the screen, tap the screen to operate commands, and draw things on apps; 2) Creative engagement such as using the app to draw shapes or trace patterns, and 3) Collaborative use such as guiding other people on how to use a device.

METHODOLOGY

This study employs a qualitative methodology to thoroughly investigate the phenomenon of the Sekolah Enuma application as a pedagogical tool in integrated schools in Bekasi and Jakarta. The qualitative approach was selected due to the research topic's generality and the necessity for a more profound comprehension. In this study, the researchers did not test a predetermined hypothesis, but rather attempted to understand

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the phenomenon descriptively. In order to ensure the reliability of the research findings, the researcher employed a triangulation technique that integrates multiple data collection methods, including observation, interviews, and Focus Group Discussions (FGD). Through triangulation, researchers can acquire more comprehensive and credible data, thereby enhancing the validity of the research findings.

The data collected from observations, interviews, and focus group discussions were subsequently analyzed utilizing the Miles and Huberman (1984) framework. This model comprises three primary stages: data reduction, data presentation, and conclusion formulation. During the data reduction phase, the collected data will be categorized and encoded to enhance analysis. Additionally, the condensed data will be displayed in a more comprehensible format, such as a table or diagram. The final stage involves drawing conclusions, during which researchers interpret the presented data to address the research questions. Application of the Miles and Huberman model enables researchers to systematically analyze qualitative data and derive more significant insights.

RESULTS

The students who use the Sekolah Enuma app on the tablets demonstrated good digital competence. In this study, we only focused on the operational skills that can be observed when the children are using the app on the tablets, as elaborated in Marsh (2016).

Table 1: Digital Competence of Children using Tablets (based on Marsh (2016)

No	Digital Competence Skills	Observation Results
1	Swipe the screen (e.g. to change photos, turn the “page” of an e-book)	Most students able to do unassisted.
2	Trace shapes with their fingers	Most students able to do unassisted.
3	Drag items across the screen	Most students able to do unassisted.
4	Open their apps	The apps are used individually, students must choose their names then enter the password which consists of pictures. Students who are unable to read require assistance from their teachers to open their accounts.
5	Draw Things	Some students are observed drawing things in Mathematics lessons.
6	Tap the screen to operate commands	Most students able to do unassisted.
7	Exit apps and enter other apps	Some students are observed exiting the apps and opening other apps i.e. YouTube, which the teacher conditioned.
8	Drag items and trace shapes	Most students able to do unassisted.
9	Turn the device on and off	Some students need assistance.
10	Increase or decrease the volume	Some students need assistance.
11	Use learning apps	All students able to use the Sekolah Enuma app, although some need assistance throughout the course of the time they use it.

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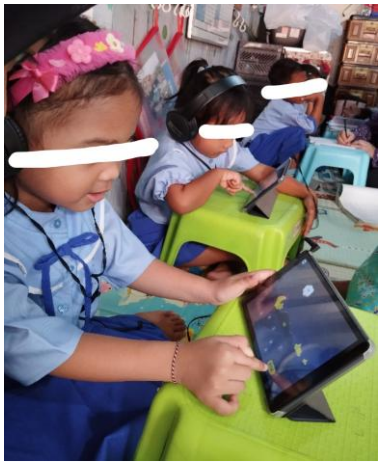
12	Unlock the device	Some students demonstrate this ability.
13	Use creativity apps	Not observed/not applicable.
14	Take photos	Not observed/not applicable.
15	Click on a cross in a box to get rid of a pop-up	Most students able to do unassisted.
16	Use gaming apps	Most students able to do unassisted.
17	Enlarge and decrease the size of objects by pinching and dragging	Most students able to do unassisted.
18	Show others e.g. siblings how to use the device	Some students communicate with others to demonstrate how a lesson is to be played on the app.
19	Use video apps	Students are able to go to the Video menu in the app.
20	Use reading apps	Students are able to go to the Books menu in the app.
21	Make videos	Not observed/not applicable.
22	Find new apps in the app-store/marketplace	Not observed/not applicable.
23	Purchase new apps in the app-store/marketplace	Not observed/not applicable.

This table presents children's digital skills in using tablets, focusing on operational skills observed when they use the Sekolah Enuma application. Most children are able to swipe the screen to change photos or move pages in an e-book independently (Picture 1). This skill is well mastered by them, indicating that children already have basic skills in using a touch screen. The children were also able to drag items across the screen independently, as shown in Picture 2. This ability shows that they are already familiar with the basic use of tablet devices, especially in moving items on the screen using their fingers. Objects can be moved or moved from one place to another on the screen, indicating that children have begun to understand direct interaction with touchscreen devices.



Picture 1. Children swiping the screen

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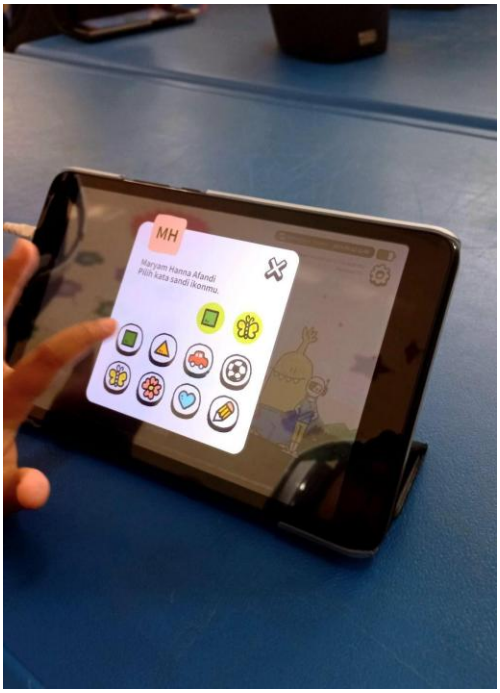
Picture 2. Children dragging items across the screen

The children are assigned their own tablets with their own individual accounts. Each tablet can hold about 8 different accounts. When children access the app, they must find their names and tap on it then input their passwords which is made up of pictures (Picture 3). Children who cannot read need help from their teachers to find their names and open their accounts. They also need help to turn the device or tablet on and off, or increasing and decreasing the volume. Each children are equipped with their own headphones so that they can listen to the audio without interference. Some children need assistance also in putting on the headphones (Picture 4).



Picture 3. Children tapping their pictorial passwords on the screen

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Picture 4. Children needing teacher assistance in turning the app on and off and putting on headphones

We also observed that children are able to exit the app and enter other apps like YouTube. The teacher needs to assist in making sure that their students stay focused in learning via the app on the tablet and not distracted with irrelevant contents. If students are bored or becoming uninterested in doing the learning modules, they can watch videos or read digital books that are installed in the apps. The children can be seen able to go to the Video and Books menu on the app (Picture 5).

Picture 4. Children accessing the Video and Books menu

DISCUSSION

Based on the research results, there are eight skills related to operational dimension of digital competence that most students able to do unassisted. They are swipe the screen, trace shapes with fingers, drag items across the screen, tap the screen to operate commands, drag items and trace shapes, click on a cross in a box to get rid of a pop-up, use gaming apps, and enlarge and decrease the size of objects by pinching and dragging. Some students need assistance turning the device on and off and increasing or decreasing the volume, also some students can unlock the device by themselves, whereas others need assistance from the

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teachers. Students can open the apps individually but those who cannot read need their teacher to open their accounts that has their names on it. The apps have Video and Books features, and some students choose this menu instead of the learning modules. There are some skills that were not observed or not applicable in the context of using the Sekolah Enuma app, they are use creativity apps, take photos, make videos, find new apps in the app-store/marketplace and purchase new apps in in the app-store/marketplace.

From the results obtained it can be said that the students who use the Sekolah Enuma app on the tablets demonstrated good digital competence. As with Marsh's findings, it could be seen that the skills needed to engage with touch-screen technology as found on tablets were relatively easy for young children to acquire, most children under 5 years old were able to do them independently (Marsh, 2016). Although still learning to read and write, they quickly become competent users of tablets as they could successfully navigate through the apps by touching and interpreting printed words, letter, icons and symbols, thus strengthening their emergent literacy skills (Neumann & Neumann, 2014).

In addition, the results of the FGD revealed that teachers saw significant benefits from the Sekolah Enuma application in monitoring student development. Teachers from several schools said that this application is very helpful, especially for children with special needs such as those with Down syndrome or hyperactivity. This application provides an interactive learning experience and helps children to focus more and improve communication skills. One teacher shared how her autistic nephew became more talkative after interacting regularly with the Enuma application. This shows that the use of technology can support the cognitive and social development of children with special needs.

Although many benefits were felt, several obstacles were also found in the implementation of this digitalization program. One of the main problems was the limited number of tablets in several schools, which resulted in having to share devices among students. In addition, the duration of application use was also a challenge. Although children generally enjoyed using the application for 30 minutes, some quickly got bored after 15 minutes, while some were very enthusiastic and were able to increase their learning levels quickly. Teachers also acknowledged that despite the challenges, this application remains a very useful tool in teaching digital literacy and developing children's cognitive abilities gradually.

CONCLUSION

In conclusion, preschool students demonstrate good digital competence with the use of the Sekolah Enuma app, particularly in basic operational skills. This early proficiency not only facilitates their interaction with digital technologies but also enhances their emergent literacy skills.

Preschool students are able to demonstrate good digital competence through the use of the Sekolah Enuma application, especially in basic operational skills. This ability not only makes it easier for them to interact with digital technology but also strengthens their early literacy skills. This application allows children to carry out various learning activities independently, which increases their involvement in technology-based learning. In addition, this application can have a significant positive impact on early childhood education by accelerating the process of learning literacy and numeracy. For teachers and parents, this application is also very helpful in monitoring student development. However, there are still some obstacles found, such as the need for some students to get help from teachers, especially for tasks that require

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literacy skills such as entering passwords. This shows that assistance is still important in the learning process.

This application is recommended to be implemented more widely, especially in areas with limited education, while still paying attention to the duration of device use. Further research can examine the long-term impact of the use of educational technology on children's cognitive and social development, especially for children with special needs, as well as how digital literacy can be integrated comprehensively into the education curriculum and its influence on early childhood development.

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