



Interactive Multimedia Development in Learning About Numbers and Alphabets for Early Childhood Education

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Abstract. Face-to-face learning conditions cannot be done optimally. Therefore, the introduction of literacy and numeracy through technology is a fundamental thing that can be given to early childhood students. Teachers are required to be creative in making Educational Game Tools (APE) as a tool to introduce literacy. This study aims to determine the extent to which the development of APE combined with distance media can improve literacy and numeracy skills in early childhood. Media used 1) Picture cards with words (introduction to early literacy/literacy); 2) A picture card with a number symbol (recognizing the concept of numbers); 3) Using a cellphone or laptop through power points, video calls, and learning videos. The results obtained in July the children's literacy and numeracy abilities were still low. After the application of multimedia in August, children's literacy and numeracy skills began to improve. In October the children's literacy and numeracy skills are very high. This multimedia development can be applied in existing PAUD schools.

Keywords: multimedia · early childhood · numbers · letters

1 Introduction

The aspect of child development becomes the scope of development that must exist in early childhood learning, starting from (a) aspects of the development of religious and moral values, (b) aspects of language development, (c) aspects of social-emotional development, (d) aspects of cognitive development, (e) aspects of motoric physical development, and (f) aspects of art development. States that learning while playing is the principle of learning in early childhood. The corner, group, and center approaches are learning models used in packaging an interesting lesson in school [1]. Modern technology has made changes in children both in learning and in interacting with their environment. Currently, television is no longer the only pervasive technology, a variety of technologies are now present, including gadget technology or mobile devices.

Some examples of gadget technology include devices, smartphones, game consoles, digital cameras, iPods, tablets, and so on. The interaction of a person with a mobile device (mobile device) such as a device, exceeds interaction with television because this

device is light and easy to carry everywhere. A device is multifunctional, this tool is not only used as a means of communication but can be used to view television broadcasts, radio, audio, and video players. It can even be used as an audio and video recording device. So that this technology takes over the function of television, radio, and audio or video player.

Without realizing it, the current generation has been introduced to technology from an early age by parents, family members, or the surrounding environment. So that today's children are very close to developing technology. Therefore, the technology media can be used by educators, both teachers, and parents, as an effective learning tool. Because face-to-face at school cannot be done optimally in learning. Children use mobile devices such as iPads or smartphones to play and learn to recognize literacy and numeracy.

Various references to books and writings have explained the use of digital media for early childhood. (Merchant, 2008) states that early childhood can use digital media to recognize letters or literacy and numeracy and its use is very productive in increasing children's understanding abilities [2]. (Maxwell et al., 2008) stated that digital technology in this case is a mobile device, namely technology that is ubiquitous and will be more pervasive in the lives of young children [3]. When this new technology is used wisely, it can be used as a means of supporting the learning process.

This technology is also easily operationalized by early childhood with adult guidance, making it easier for children to take part in learning. Various considerations remain a concern for parents and educators in choosing the right media for students. Mistakes in choosing media have an impact on the development and character formation of children. Selection of the right media is an opportunity that must be used in maximizing children's physical development, as well as discussion of current learning and technology.

Based on the existing background, the goal to be achieved is to optimize literacy and numeracy recognition in distance learning through zoom and video calls. In the introduction of literacy, it is hoped that early childhood education teachers will be able to design according to the uniqueness of learning in Early Childhood Education (PAUD).

Teachers are required to be creative in making Educational Game Tools (APE) as a tool to introduce literacy. This study aims to determine the extent to which the development of APE combined with distance media can improve literacy and numeracy skills in early childhood (Jazariyah & Durtam, 2019) [4].

2 Methods

The research conducted was early childhood group B aged 5–6 years at TKIT Sholahuddin 1 Bogor, located on Jl. Aria Suria in the match No.9 of Pasir Jaya Village, West Bogor District, Bogor City. The data analysis used in this study follows the data analysis model of Miles and Huberman, which states that the activities in qualitative data analysis are carried out interactively and continue to complete so that the data is saturated.

The data analysis steps were carried out as follows. First, data reduction. Reducing data by summarizing, selecting main things, focusing on important things, looking for themes and patterns. So that the reduced data will provide a clearer picture and make it easier for researchers to carry out further data and then look for it if needed. Second, data display (data presentation), namely data that has been reduced, then the next step is to display the data.

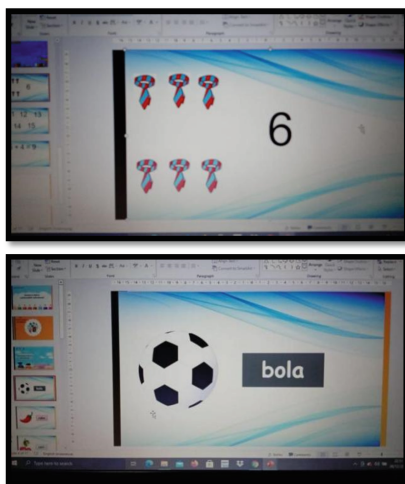


Fig. 1. The card used by researchers. Source: Elli Fitriani's documentation.

In qualitative research, the presentation of data can be done in the form of a brief explanation, charts, and relationships between categories. Third, conclusion drawing/verification, with conclusion and verification. A preliminary conclusion put forward by the researcher is still provisional, it will change if there is no strong supporting evidence found at the data collection stage.

APE development helps teachers to improve skills and creativity for the introduction of literacy and numeracy to early childhood. Researchers modify picture cards which are integrated into PowerPoint slides to make distance learning effective.

Media used:

- Picture cards with words (introduction to early literacy/literacy).
- Picture cards with number symbols (getting to know the concept of numbers)
- Using a cellphone or laptop through power points, video calls, and learning videos.

The methods are as follows (Inten et al., 2016) [5]: singing, guessing the picture card, composing pictorial syllables, and composing syllables using no pictures.

3 Results

Basic literacy as a life skill includes literacy in reading and writing and numeracy. This ability needs to be developed from early childhood. In implementing this literacy introduction, it is hoped that early childhood education teachers will be able to design according to the uniqueness of learning in Early Childhood Education (PAUD).

The results of research in the application of literacy and numeracy in learning group B TKIT Sholahuddin 1 Bogor, early literacy stimulation conducted through online synergizes with learning in general and in particular the 2013 curriculum (Maharani, 2015)

[6]. In the practice of learning early literacy skills, it has been integrated into strategies, methods, media, and evaluation of early childhood learning programs, especially at TKIT Sholahuddin 1 Bogor states that the results of the research are under the theory of the type of literacy coverage, especially literacy carried out by TKIT Sholahuddin 1 Bogor, as follows. First, Group B TKIT Sholahuddin 1 Bogor has carried out learning activities with phonological awareness, in which children realize that words are based on the smallest sound unit, namely the alphabet. Children need to realize that the function of the alphabet is to form words. The teacher has implemented early literacy learning, this is evidenced by learning the introduction of letter A, the teacher introduces it through the sound of the letter A.

(Basyiroh, 2018) states that vowels (AIUEO) are introduced as the prefix for words that use vowels [7]. Then there are also syllables and open words for children who are already able to read. Group B TKIT Sholahuddin 1 Bogor has been interested in printed material, which is written in the form of slides in power points.

Children who grow up surrounded by books and are used to reading books from an early age both at school and at home are more familiar with letters, syllables, and open words online, such as through zooms and quizzes. Children are also motivated to get to know more and enjoy reading with a variety of interesting methods and media presented.

The manual given to parents for their children can be used by Ananda at home. So that eventually the children will try to read on their own. Second, the introduction of numeration is carried out by introducing the concept of numbers, counting sequentially, recognizing number symbols, and simple addition using online learning media as well as beads and others entrusted to a manual that parents can take home (Antari et al., 2016) [8].

The teacher carries out this activity by displaying literacy, namely letters, syllables, open words, and numeration, namely the concept of numbers, number symbols, and simple interesting additions on slides accompanied by appropriate music to make children interested in playing while learning (Putra & Ishartiwi, 2015). This activity has been carried out by Group B TKIT Sholahuddin 1 Bogor with the availability of various media and various methods as a source of information for teachers to convey to children [9].

In storytelling activities, the teacher uses hand puppets or storybooks that are large and illustrated so that children get to know a variety of information and instill characters in the stories being told. Fourth, background knowledge, children understand the world around them and can express their opinions through speaking activities, answering questions, and interacting with teachers and friends in zoom activities.

The teacher has implemented it through the storytelling process and then re-evaluates the learning activities. Supporting factors for achieving the application of literacy and numeracy in learning to stimulate early childhood literacy include (Ekowati et al., 2019) [10]: a) intelligence level of students, b) motivation of students, c) educators, with quality educators will produce a good learning process, d) facilities infrastructure, with the existence of good infrastructure, will support the achievement of learning following expectations, e) support of parents. The research results can be seen in Fig. 2.

Based on Fig. 2, it can be seen that in July children's literacy and numeracy skills are still low. After the application of multimedia in August, children's literacy and numeracy

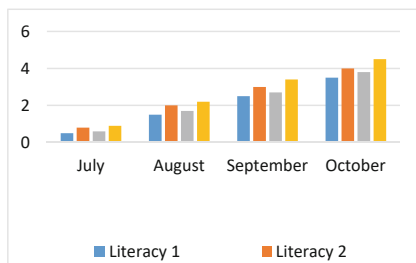


Fig. 2. Literacy and Numeration

skills began to improve. In October the children's literacy and numeracy skills are very high. This multimedia development can be applied in existing PAUD schools.

4 Conclusion

Based on the collection and analysis of existing data, the application of literacy and numeracy learning in stimulating early childhood literacy group B TKIT Sholahuddin 1 Bogor in the academic year 2020/2021, the researchers conclude as follows; First, in implementing the strategy for implementing literacy and learning numeracy carried out in the network (online) by group B TKIT Sholahuddin 1 Bogor, using an integrated learning strategy as before, which refers to the 2013 curriculum and is packaged in mobile and laptop technology media and methods. Face-to-face facilities can still be done by zooming or playing the Quiz. Second, in learning the principle of playing while learning is still carried out by paying attention to aspects of child development. Third, literacy and numeracy can still be provided with attractive technological methods and media so that teaching and learning activities can be effective. Fifth, the collaboration between teachers and parents is an important value in motivating children and the effectiveness of learning carried out in the network (online).

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