Effectiveness of Using Digital Media as a Learning Support Media in Elementary School

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Abstract. The purpose of this study is to find out how digital learning media can be effectively delivered to elementary school students in Banyumas, Kebumen, and Banjarnegara areas. The use of digital media as a supporting media for the learning process is something that must be done in the last four years. This is becoming critical issue during the COVID-19 pandemic, where learning is done online. Teachers at the elementary, junior high school, senior high school and college levels must adapt to the technological developments for developing learning materials. They must also learn on how to deliver learning materials without having to meet their students face to face. Problems occur when students do not understand or do not have necessary facilities for online learning during the pandemic. Another issue is the internet quality (such as poor connection) that does not support the online teaching method, especially for elementary and junior high school. In short, the problems that arise are: 1) Teaching of material that must be done online during COVID-19 pandemic, 2) Unstable internet access or poor internet connection, 3) Less effectiveness for students' understanding because of the nature of learning materials. The method used in this study is a qualitative method with field observations. The results obtained from this study are how digital media can adapt to the needs of small storage space and use offline to target elementary school students who are in difficult signal areas, and how digital graphic communication can convey the contents of learning materials effectively.

Keywords: Visual Design · Interactive · Learning Media · Elementary

1 Introduction

The use of digital media as a supporting media for the learning process is something that must be done in the last four years. This is becoming an important issue during the COVID-19 pandemic, where learning is done online. Schools, universities, and companies are also forced to do remote working and make online learning become something inevitable [1]. Online learning practice in elementary school was not effective because of various reasons, including lack of direct learning, teacher-student interaction, and practical experience [2]. Learning environment is also different which becomes an obstacle and distraction in their learning environment. The other problems occur when students

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do not understand or do not have necessary facilities for online learning during the pandemic. Another issue is the internet quality (such as poor connection) that does not support the online teaching method, especially for elementary and junior high school students. Based on the learning condition, there are three problems that arise. Firstly, teaching of material that must be done online during COVID-19 pandemic. Because the teaching material must be done online, students are forced to use or buy supporting tools such as handphones or laptops. However, economic capabilities are different for students where some of the students cannot afford these gadgets. Secondly, unstable internet access or poor internet connection. In rural areas, the internet connection quality is mostly poor which makes students unable to download learning materials or follow the learning process online. Thirdly, lack of students' understanding because of the nature of learning materials. Puspitarini [3] stated that using conventional lecture methods in the learning process does not attract students to learn the material and decrease their motivation to learn. The purpose of this study is to find out how digital learning media can be effectively delivered to elementary school students in Banyumas, Kebumen, and Banjarnegara areas.

2 Discussion

This research was conducted by using the method of observation and interviews with elementary school teachers. Observations were carried out on 5th grade students of SD Binangun II Banyumas, with Mrs. Tuti Susanti, S.Pd as resources person. From the results of observations, it was found that elementary school students looked less enthusiastic only when they were given learning materials using books and student worksheets (Student Worksheets), both when studying at home during the COVID-19 pandemic) or when learning was carried out in class.

Based on interviews conducted with Tuti Susanti S.Pd, it was obtained that the results obtained from the students when a test was held for the science subject, many students got a score of 60 or lower. This is because many children are not accustomed to reading from an early age, thus making many students feel that reading is something boring. The use of limited media (only using one passive medium such as asking children to read only a book) makes learning less than optimal [4]. A lesson should be given using a method or media that can be understood well by the target. Therefore, it is argued that learning using interactive methods will make elementary students more enthusiastic in learning something [5].

To make an interactive learning media for children who are studying at the elementary level, it is necessary to pay attention to aspects that can be played and the message can be visually captured. To understand a science that is being studied, elementary school children need to not only see and read, but also need to do something to make them understand better what they are learning. Interaction with what is being studied is something that will make a child more able to record his experience to understand a learning material [6]. This will be even better if the activities conducted in learning are done in everyday life. With activities carried out daily, the learning materials will be easier to understand. In addition, students will also be able to learn not just reading the existing theory but also every time they do something in their life, they will remember what is being studied.

Another factor that must be considered is the constraints for online learning. Learning when it is done online, many students are then constrained for several reasons. The first reason is not all students have a smartphone. Secondly, not all children have adequate devices (relatively low processor or small storage memory. Thirdly, unstable signal in Binangun, Banyumas, Central Java. Because of these three things, the teachers then decided to do offline learning but it was done with a well-maintained process. The next problem that arises is that the delivery of material through the worksheets that have been provided cannot be captured optimally. This is indicated by the lack of students who can provide explanations either in writing or in direct presentations related to the learning material being given.

3 Observation Results

When learning only uses worksheets, there are still many students who feel they have to memorize the material in the form of writing and static images in the book (Fig. 1). From the results of interviews with students, it was found that the lessons contained in the book were difficult to capture, because the students felt that everything had to be memorized. They cannot remember directly what is in the book. This is because students are only asked to read and answer questions, and they feel this is not useful for them as they do not encounter these things in their daily lives.

Learning with the right media (Figs. 2, 3 and 4), which is often used by students in their daily activities, will make learning materials easier for students to understand [7]. In this case, the use of smartphones is one of the things that later becomes an option that has great potential to be used. Even though not all have it individually, learning something in groups will make students more enthusiastic in learning what is being studied. In the lesson, according to Mrs. Tuti's explanation (as a teacher and learning application maker), she tried to apply learning media that uses smartphones as a tool to

Fig. 1. The learning atmosphere at SDN 2 Binangun when using worksheets and children are still asked to read learning materials about science subjects related to changes in the shape of objects.

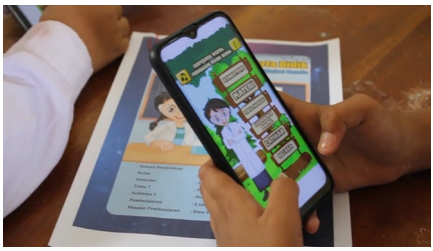

Fig. 2. Initial menu display when the application is opened. The orientation when run is made in a vertical direction to make it easier to operate the application (more ergonomic in use).

deliver learning materials. In making the design, Mrs. Tuti used an illustrative approach to drawing cartoon models (image models that are liked by children who are the target of learning) and events and objects that are often encountered by children in their daily lives. The selection of this picture and story model is not made based on personal desires but is adapted to the daily lives of students who will study. Students will find it easier to learn something if they see something concrete [6].

Another thing that is of concern to Mrs. Tuti as the maker of this application is that the application must be able to be used on low-spec smartphones with limited processor and memory. Furthermore, it must be able to be used offline. From the use of this application,

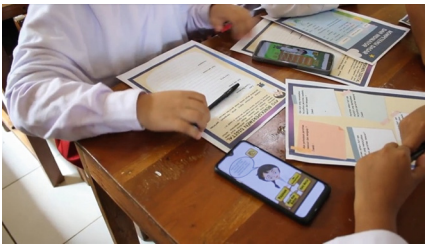

Fig. 3. When used this application becomes an explanatory medium for students in working on existing worksheets.

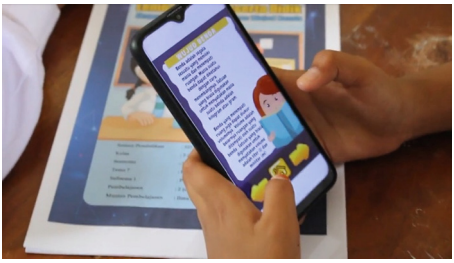

Fig. 4. This application becomes effective for students to use because students use sense of sight, Sense of touch and Sense of hearing. What makes students will have more experience because they use more senses, rather than just seeing text and still images.

it turns out that there is an increase in the value of children's learning outcomes. Based on the results of interviews with Tuti's mother and fifth grade students at SDN 2 Binangun, it was found that after using this application there is increase of average score from 60 to 90. This shows that changes in learning media that are more in line with the intended target will make more optimal learning delivery and better learning result.

4 Conclusion

In conclusion, the learning for 5th grade science subject of elementary school about changing the shape of objects is getting better When the media used to convey knowledge or learning materials is adjusted to the target, the learning/message delivery will be more effective. Effective and easier to absorb and understand. There are four things that are changed in the delivery of this learning material. First, media which was initially only absorbed by using the sense of sight, then changed by absorption of messages using the sense of sight, sense of touch and sense of hearing. Second, initially the message was only conveyed using still images and text, in the designed application the message was delivered through still images and moving images, writing, and sound. Third, initially the learning only asks students to read, view and write. The improvement includes allowing students to operate smartphones which are used daily as tools for playing or learning and communicating. Fourth, in using this application, students can see more contextually related to what is being studied and the daily life they experience, so that the absorption of learning material can be faster, because students already know well what they are learning.

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Authors' Contributions. Bayu Widiantoro, research team leader, idea generator, observer and analyzer of student behavior; Maya Putri Utami, team member, visual design analyzer and interactive design on students.

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