Strategy and Implementation of Technology-Based Student Literacy and Numeracy Improvement

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Abstract

Literacy and numeracy skills and mastery of technology in students for the current era are important to improve. The purpose of this study was to improve students' literacy and numeracy skills through a technology-based approach. This research was conducted in an elementary school, SDN 1 Bogangin Banyumas, involving all students. The method used was descriptive qualitative. The research covered the application of technology in learning, including the use of interactive educational software and online learning platforms, such as the utilization of quizizz, ztype, abcya and other websites. In addition, training for teachers and students in the use of these technologies was also conducted. The results showed that the use of technology in learning significantly improved students' literacy and numeracy skills. Students showed significant improvement in reading comprehension, writing ability and numeracy skills. They also showed higher interest in learning and greater motivation to develop literacy and numeracy skills. In addition, the use of technology also helps students to develop critical, creative and collaborative skills. However, there were some challenges faced during the implementation of the research. These challenges include the inadequate utilization of technology, the training needed for teachers in integrating technology in classroom learning. Based on this, recommendations are given to schools and related parties to continue developing the use of technology in education, including the utilization of available technology facilities, training teachers on technology-based learning for students, and developing a curriculum that integrates technology-based literacy and numeracy.

Keywords: *literacy, numeracy; technology; education; students.*

A. INTRODUCTION

The advancing times today have made technology an integral part of daily life and have significantly impacted various fields, including Education (Hanifah et al., 2021). In the field of education, technology plays a crucial role in the implementation of knowledge and as a support in learning media (Maritsa et al., 2021). The advancement of information technology and the internet nowadays has resulted in a plethora of diverse digital information (Dantes et al., n.d.). Therefore, technology-based learning has become a necessity. By providing electronic devices that support the learning process, schools are expected to keep up with technological advancements(König et al., 2020). Learning will be effective and efficient with proper facilities and resources in place (Hanifah Salsabila et al., 2020). In this digital era, elementary school students also need to develop the ability to adapt to technology in order to utilize it effectively for learning and their personal development (Lestari, 2018). In this case, teacher are required to be able to master current developments for the progress and good of a nation, especially the world of education (Aspi Stai Rakha Amuntai Et Al., 2022).

In this advancing world, literacy and numeracy have become crucial foundational skills for a nation, particularly at the primary education level. Learning should focus on developing literacy and numeracy competencies, as well as the ability to adapt to technology (Waldi et al., n.d.). These competencies are deemed mandatory standards for students to navigate life beyond the classroom. However, the reality is that the literacy and numeracy levels of Indonesian students are still low and have not progressed as they should (Ginting, n.d.). Consequently, we lag far behind compared to other countries.

Students face challenges and obstacles in adopting technology for literacy and numeracy learning. One major hurdle is that elementary school students might lack sufficient technology skills. They may not be familiar

with using technological devices such as computers, Chromebooks, tablets, or educational software. Elementary school students might also struggle to integrate technology into their learning process. Teachers may also encounter challenges in effectively facilitating technology use in the classroom, both for direct instruction and providing technology-relevant tasks and activities.

One of the elementary schools aiming to improve the utilization of technology in the learning process is SDN 1 Bogangin Banyumas. This school is belonging an inclusive and experimental school in various areas, including enhancing technological knowledge for its students. The school provides its students with Chromebooks and internet access via Wi-Fi as learning tools and resources. However, these resources have not been managed and utilized to their full extent due to a lack of supporting human resources.

Hence, it is necessary to design effective strategies and methods to assist elementary school students in developing technology adaptation skills, implementing them, and considering the role of teachers in supporting and facilitating appropriate technology use in the classroom.

B. METHOD

The method used in this research is a descriptive qualitative approach. Descriptive Qualitative involves accurately presenting the characteristics of data in accordance with their nature(Waldi et al., n.d.). The data analysis obtained consists of narrative descriptions of the situations or conditions being studied through exposition or portrayal of the existing circumstances(Villaespesa & Wowkowych, 2020). Data collection techniques were carried out through stages of observation, interviews, and documentation(Hafiz & Anisa, 2022).

The research was conducted over a period of three months, from February 20th to June 12th, 2023. The research was conducted at SDN 1 Bogangin, Sumpiuh District, Banyumas Regency. The subjects of this research consisted of 245 students from 12 class groups, ranging from lower grades (grades 1-3) to upper grades (grades 4-6).

In the initial stage of the research, an observation was conducted on the school under study, SDN 1 Bogangin, by gathering information related to the school's conditions such as the school environment, classrooms, student abilities, and available facilities. The next stage involved interviewing relevant parties such as the school principal regarding the available facilities, class teachers regarding the teaching process, students literacy and numeracy levels, and their ability to use technology, as well as the school guards regarding the school and its surroundings. The final stage involved documenting through photographs and videos. Documentation serves as accountable evidence and can authenticate the authenticity and accuracy of the available data.

C. RESULT AND DISCUSSION

The introduction of technology to students

The introduction of technology to students is carried out gradually, involving the introduction of learning through websites like Canva, which includes creating engaging PowerPoint presentations for higher-grade students (Grade 6). Educational games are used to enhance literacy and numeracy skills for lower-grade students (Grades 1-3). The utilization of the "LiteracyCloud" website offers a collection of fables and children's stories across different grade levels, allowing students to choose stories that match their abilities. Additionally, the use of Quizizz enables students to review previously taught material using technological innovations.

Technology-innovated literacy learning

1.   Literacy.Cloud
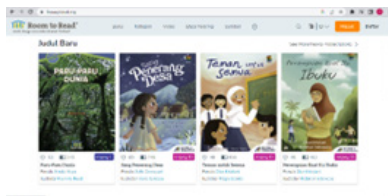
Picture 1. Home page Literacy.Cloud

The main page of Literacy.Cloud with many main features, namely reading books and there are reading book filters that make it easier for users to find the desired book, book categories contain reading lists such as low grade categories, high grade, reading aloud and many more.
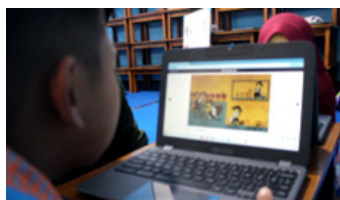
Picture 2. Implementation learning

During the implementation of the literacy improvement program using the Literacy.Cloud website, the target in improving literacy is the lower grades, namely grade 1 to grade 3. Students are directed to the lab room. school computers to use existing facilities in the form of chromebooks and supporting providers in the form of Telkomsel Flash Internet Access, it can be seen that the enthusiasm shown by students when learning literacy using the website increases, students are more excited to learn because the website has interesting animations and fonts.

2.   Canva

Picture 3. Learning canva

One strategy and implementation of increasing literacy in students is learning to use the canva website, by teaching students about the basic knowledge of canva and explaining the features provided such as power point design templates, invitations, posters and many others. In this canva learning, it focuses more on how to make interesting power points starting from the beginning of making to using the available templates. This is intended for future provision at a higher school level. The implementation of the program is devoted to high grades, namely grade 6 because it is the final stage class where students need more competence and talent interests and need a lot of practice that is useful for heading to junior high school.


Picture 4. Implementation learning canva

The results of the implementation of Canva learning can be seen from the new knowledge and enthusiasm of students in learning it, besides that, this learning also trains and becomes a forum for developing students creativity

skills where students can practice making power points as interesting and unique as possible according to their wishes using the available features.
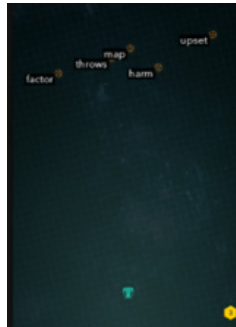
3.   ZTYPE
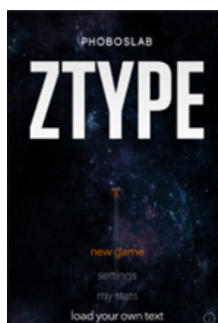
Picture 5. Main menu ZTYPE

There are optional features that can be used by users such as starting the game, settings consisting of music volume and sound that can be adjusted or adjusted by the user to make it more comfortable when playing such as users or students can turn down or turn up the music or sound in the game.

Picture 6. Implementation learning ZTYPE

The implementation of ztype is specific to class 3, the class was chosen because it is one of the classes that implement the independent curriculum.

Picture 7. Game is run

When students use the ztype game, there are several words in the layer that need to be added requiring students to type according to the words provided quickly to be able to win the game, this can train students' speed in thinking and they are trained to be able to focus and train students memory.

4.   Quizizz
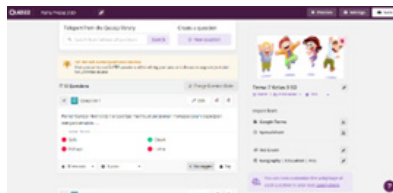
Picture 8. Making study questions

Making quizizz questions in order to review the material that has been taught by the previous class teacher and train students thinking speed because on this website there is a time that has been set by the question maker.
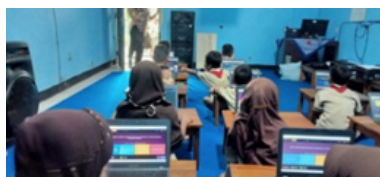
Picture 9. Implementation learning quizizz

Implementation was carried out targeting grade 3 students, because this class is a class with the Merdeka curriculum and one of the categories of literacy and numeracy skills that are still lacking.
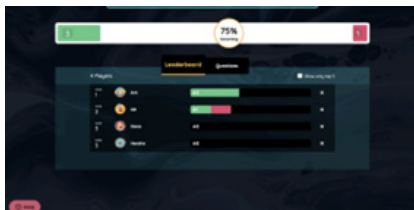
Picture 10. Temporary Results of Student Work

There is a display of the student's current score, the rank of the name always changes if the student answers correctly. The top ranking can be displayed and there is a customizable ranking option if the user wants only the top 5.
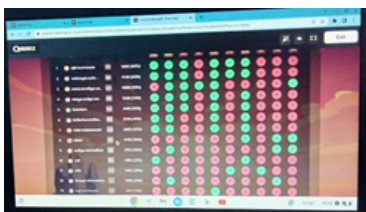
Picture 11. Final Score Result of Quizizz

The results of the final score of grade 3 students who have worked on questions on the quizizz website, can be seen the number of correct and incorrect answers chosen by students. The correct answer is represented by green and the wrong answer is represented by red, the score and name of the student who answered can be seen on the left screen.

Technology-innovated numeracy learning

Picture 12. Home page ABCya

The main page of the ABCya website contains a choice of grade levels and a search feature for the game that students want, but the disadvantage of this website is that it does not provide many languages, only English.

Picture 13. Implementation learning ABCya

The learning target for this website is grade 3 students, carried out in the classroom by dividing into several groups to help each other in completing the game they choose.
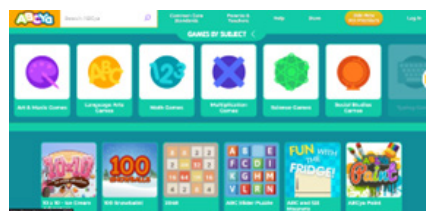
Picture 14. ABCya Game Selection

There is a large selection of categorized games such as coloring and music games, math games, knowledge and many others. The games can be used by students for free but require a stable internet connection.

D. CONCLUSIONS

After conducting this research on the strategy and implementation of technology-based literacy and numeracy improvement, the following conclusions can be concluded:

1. The use of technology in improving literacy and numeracy in students is more effective than without using technology in it, the enthusiasm of students is more visible when the activity takes place.

2. Improving learning methods for students is needed so that students are trained in various new methods taught, especially in technology-based learning.

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