



Implementation of the Kaulinan Barudak Application as a Numeration Learning Media

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Abstract. This research aims to describe the implementation of the kaulinan barudak application as a numeracy learning medium. The method in this research is descriptive qualitative where the researcher conducts an in-depth study of the process of research activities carried out to get a picture of student responses to the use of the kaulinan barudak application. This research activity uses the instruments of observation, interviews, and documentation. The research was carried out in the new academic year 2022/2023 when almost all schools met face-to-face after the COVID-19 pandemic. The research was conducted in junior high schools in West Java. Data analysis techniques in the form of triangulation techniques, reference materials, and member checks. The results of the study are (1) Kaulinan application cannot be used as a numeracy learning medium. (2) Kaulinan applications are not applications that integrate culture, mathematics, and technology. (3) Kaulinan application cannot provide a pleasant learning experience for students. Recommendations are given to students and mathematics teachers who are expected to be able to utilize Android-based information technology in learning such as the Kaulinan Barudak application.

1 Introduction

Ethnomathematics is a bridge between mathematics and culture in people's lives [1–11]. Along with the times, it is necessary to re-strengthen the identity and identity of Indonesian children in knowing and preserving the nation's culture through mathematics learning activities. About the independent curriculum, namely realizing Pancasila students. Pancasila students are the embodiment of Indonesian students as lifelong students who have global competence and behave by the values of Pancasila, with six main characteristics: faith, fear of God Almighty, noble character, global diversity, cooperation, independence, critical reasoning, and creative [12–16]. On that basis, it is necessary to cultivate a love for the homeland that is associated with culture and mathematics to train students to think critically and creatively.

Numeration is the ability to apply the concept of numbers and arithmetic operations as well as being able to handle problems in everyday life at home, school, and in the community [17–23]. Students' numeracy abilities can be seen to what extent students can apply knowledge of mathematical concepts to everyday life. Shiva is expected to be able to solve a problem and problems encountered critically and creatively. Maximum

learning experience by linking mathematics in everyday life can provide new experiences in student learning activities.

Kaulinan barudak is a learning media designed by researchers as a creative solution that integrates mathematics, culture, and technology. Kaulinan barudak (traditional game) in the Sundanese is the dominant population in West Java. The current conditions underlie the need for rapid movement and public concern for the sustainability of culture in West Java. Displacement of traditional games with the presence of modern games [24]. As researchers try to integrate traditional and modern and package them into Android applications to improve students' numeracy skills. The low numeracy ability of students is because the teacher has not optimally provided contextual mathematics experience to students with the lecture method which is still being practiced so that students are bored [25]. Based on this, the researchers conducted research on the development of learning media and implemented them.

The novelty of this research is to integrate culture, mathematics and technology into mathematics learning. Thus, this is a new breakthrough in post-covid-19 mathematics learning.

2 Method

Research activities were carried out using a qualitative descriptive approach [3, 26]. Researchers made observations on the results of an intervention using Android-based mobile learning. The design of this research is a case study so this research activity focuses on a phenomenon that is selected and understood more deeply related to the use of the kaulinan barudak application. Data collection was carried out on schools in West Java by taking several schools in West Java, both public and private, and Mts. When the research was conducted, the new academic year 2022/2023 odd semester where the school had started to carry out face-to-face activities so that it was easier for researchers to collect research data. The instruments used are interview, observation, and documentation guidelines. These instruments are used to dig deeper into information. The data analysis technique used is data collection, data reduction, data presentation, and conclusion drawing. The validity of the data is checked by using triangulation techniques, reference materials, and member checks.

3 Result and Discussion

Research on Sundanese culture from the perspective of ethnomathematics is very interesting to do, as well as research on other diverse ethnic cultures in Indonesia, especially Javanese ethnomathematics as the largest ethnic group [27]. The very nature of mathematics has been around since the days of the ancestors of the Sundanese people and is still widely used in daily life, especially in rural communities [28]. Children's games can be divided into three, namely games that are full of physical content, games that are full of verbal content (songs), and games that are full of imaginative content [29]. Traditional games are a national culture that must be preserved and will be passed on to the nation's next generation of children [30]. Sundanese people have applied mathematics in their daily life. There is a need for a more in-depth study related to culture, especially

traditional games that will focus on research that is used as an Android-based learning media. Previously, researchers had carried out development activities for an Android-based mathematics learning application named Kaulinan Barudak, which came from the Sundanese language. This application was developed as a basis, namely traditional games in West Java which are usually played by children from the Sundanese tribe. Traditional games such as hide and seek, galah salted or gobak sodor, engklek, dragon snake, dakon, cublek-cublek suwung, marbles, rubber jump, banana amparampar, and fortification [31].

Figures 1, 2, and 3 show several screen displays of the Kaulinan barudak application that are successful and suitable for use in mathematics learning activities, especially for junior high school students. Figure 1 shows the home screen display when the application is first opened where there is an introduction, material, quiz, and about the menu. Furthermore, Fig. 2 shows the material that lists the names of traditional games in West Java. When you click on a game, a submenu will appear, including history, how to play, video games, ethnomathematical elements, and sample questions. Figure 3 shows the quiz in the practice questions that have 4 choices, students are asked to click to answer the question. The correct answer will be worth 1 if the wrong answer is 0 and the final score is 10 and the questions are randomly generated between users to minimize cheating and cooperation.



Fig. 1. Home

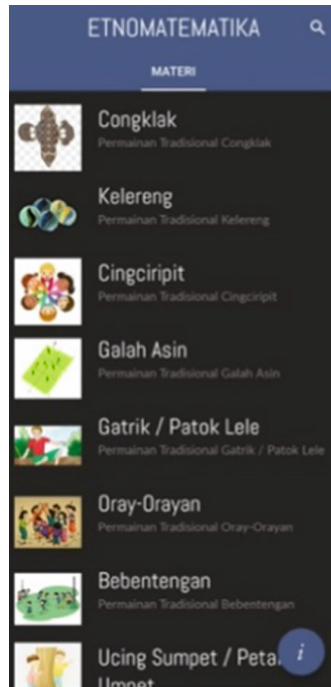


Fig. 2. Menu

The use of this application is expected to be able to give new experiences to students that many traditional games can be used for learning mathematics which can improve students' numeracy skills. Traditional games contain cultural values that need to be preserved [32]. Therefore, it is necessary to have attractive packaging so that students do not get bored in the learning process carried out. The implementation of the Kaulinan Barudak application is carried out in junior high schools in the province of West Java. The results of this implementation show that students' interest in the application of technology in learning activities can also be used to prevent and reduce violent behavior among students [33]. This can have an impact on the numeracy learning process and the importance of managing emotions in character education is important. Character education needs to be pursued more optimally so that these character values can be a provision to build the nation's future generation [34]. Strengthening character education includes: strengthening religious, nationalist, independent character education, cooperation, and integrity [35].

Figure 4 shows that students are using the Kaulinan Barudak application. Based on the results of the implementation activities that have been carried out, the researchers observed activities as long as students used the application. The activities that the researchers carried out started from guiding how to install into cellphones and guiding students to use the application. Furthermore, students are given the freedom to explore the application and if something is not clear, the researcher provides solutions to the

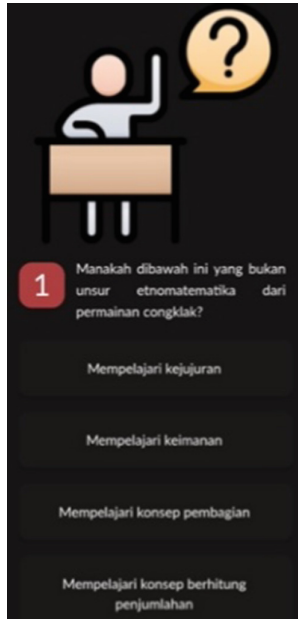


Fig. 3. Quiz



Fig. 4. Implementation

problems. Furthermore, the implementation is done by providing examples of numeracy activities that exist in everyday life. The researcher asked students to do practice questions and for the highest score was given a chocolate award.

Researchers conducted interviews with students regarding how their response to the application was whether they had a better understanding of numeracy using traditional

android-based games. 91% of students who use this application better understand the application of numeration to everyday life. Based on this, it can illustrate that this application is very useful for providing new experiences to students in learning activities that integrate technology, culture, and mathematics.

4 Conclusion

Based on the results and discussions that have been carried out, it can be concluded that the new Kaulinan application cannot provide new experiences for students in the process of learning mathematics activities. The integration of culture, mathematics, and technology provides a new color to mathematics learning so that students' numeracy skills are more honed. The new Kaulinan application cannot be used as a numeracy learning medium. Figures and tables should be placed either at the top or bottom of the page and close to the text referring to them if possible.

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Authors' Contributions. Ari Irawan conducted identification, ethnomathematical analysis, and practice questions contained in the application. Wanti Rahayu and Rahnita Nuzulah do the design, application development, and revision until the application is suitable for use. All authors carry out research implementation.

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