

Research Article

Application of Numeracy Learning Movements Using Pianika Musical Instruments in the 7th Batch of the Program Kampus Mengajar at UPTD SD Inpres Beiposo, Nusa Tenggara Timur, Indonesia

Elias Fernando Selis, Ferdinandus Bate Dopo*, Kanzul Fikri and Sena Radya Iswara Samino

Music Education Study Program, STKIP Citra Bakti, Ngada, Nusa Tenggara Timur, Indonesia, 86461

*Corresponding Author: ferdinbate@gmail.com | Phone Number: 081324410215

ABSTRACT

This study aims to enhance students' interest and motivation in numeracy learning through an interactive and engaging approach using pianika musical instruments as learning media. By integrating music into numeracy learning, the study seeks to create a fun and effective educational experience. The research employed a three-stage process: planning, implementation, and evaluation. Data were collected by administering numeracy tests to students before and after the implementation of the pianika-based learning approach. The data analysis involved comparing the results of these tests to measure the effectiveness of the intervention. The findings demonstrate that the application of numeracy learning using pianika musical instruments at UPTD SD INPRES Beiposo significantly improved students' numeracy skills. The average scores from the numeracy tests showed a marked increase after the implementation. This approach not only facilitated a better understanding of mathematical concepts but also heightened students' learning motivation by fostering a more interactive and enjoyable learning environment. The implementation of numeracy learning using pianika musical instruments under the Kampus Mengajar Program has delivered substantial benefits, improving the quality of education for both students and participating university students. For students, this method effectively enhanced their numeracy skills and learning engagement. Meanwhile, for university students, the program provided valuable opportunities to develop their potential and expand their knowledge beyond campus life. Moving forward, it is recommended to continue and refine this program by enhancing supporting facilities, such as musical instruments, and involving more stakeholders, including parents and local communities, to foster greater student participation and outcomes. Additionally, exploring the use of other musical instruments in numeracy learning could further expand its effectiveness and interactivity.

Keywords: Numeracy Learning; Pianika; Student Motivation; Interactive Methods; Kampus Mengajar

1. INTRODUCTION

The Ministry of Education and Culture program on teaching campuses is one of the programs that is very helpful and an opportunity for the quality of education in Indonesia. This can be seen from changes in students in the educational context. This indicates the low literacy and numeracy skills of students and the quality of learning in Indonesia, especially in literacy, science and mathematics learning (Fitriana & Khoiri Ridlwan, 2021). The directorate general of higher education, department of education and culture, will continue to evaluate and maintain campus teaching programs. This program aims to empower students as part of the solution in improving the quality of basic education in Indonesia, especially in 3T (Frontier, Outermost, Disadvantaged) areas or schools that need additional assistance. The goal of literacy is to establish participants' minimum competency in aspects of literacy and numeracy (M. P. Basis et al., 2021). Through this program, students are sent to elementary schools to help with the learning process. Their job is not only to help teachers teach, but also to help develop literacy and numeracy programs in the school. The teaching campus is one part of the independent campus learning program (MBKM), which aims to provide opportunities for students to learn and develop themselves outside the lecture environment (Hartatik et al., 2022), this teaching campus program was launched by the minister of education and culture of Nadiem Anwar Mahkarim on February 9 2021. Through the campus teaching program, the campus team teaching the 7th generation at UPTD SD INPRES an impact on student achievement in mathematics. This shows that music can improve students' understanding of mathematical concepts through the

connection of rhythm, pitch and time with numeration. BEIPOS0 took the initiative to implement the numeracy movement through music. Instrumental music learning can have.

Numeracy learning at elementary school level has a very important role in developing critical and logical thinking in students. Students' literacy and numeracy skills are really needed, so if they are not met, it will cause discomfort to the child as well as hinder opportunities for quality growth and development in the next stages of life (Hikami *et al.*, 2023). On the other hand, mastery of numeracy skills will influence many aspects of life, because information about any knowledge can be related to understanding numeracy (D.I.S.Basic, n.d.). Therefore, teaching staff are required to use innovative learning methods so that students can understand the concept of numeracy better and have more fun. Judging from that, the research takes an interesting approach, namely the integration of music and numeracy. Music has long been considered an effective medium for improving students' cognitive and emotional skills. Data analysis techniques in research are data collection, data reduction, data display/analysis, and conclusion drawing/verification (Rachman *et al.*, 2024). (Rohmatun & Jayadinata, 2017) stated that the most effective strategy for achieving aspects of creativity and skill is learning the art of music.

In this context, the pianika musical instrument can be used as an effective numeracy learning medium, because students can learn to associate number notation with patterns and rhythm, which supports and helps their numerical understanding process. One of the basic skills that is important to develop in elementary school is recognizing shapes, distinguishing between types of musical instruments and being able to play one of the commonly found musical instruments such as the pianika (Widyawati, 2016). Habituation of numeracy skills can be carried out through the school literacy movement using various strategies and learning resources that are adapted to the needs and potential of children. Numeracy abilities will increase with the presence of game tools that children can use as learning resources (Selvi, 2021). Research shows that playing music with musical instruments such as the pianika can improve students' ability to recognize rhythmic and numerical patterns, which are important elements in learning basic mathematics (Putra, 2023). The use of real media and materials from local potential can also help educators recognize the relationship between numeracy skills and basic mathematical concepts, thereby making the introduction of numeracy skills fun.

In research at SDI Beiposo, researchers found that the numeracy abilities of students in high classes, namely in class V, were still low. This can be seen from their learning results which show that many students still have difficulty understanding basic concepts such as addition, subtraction and measuring time. There are many things that cause this problem to occur, one of which must receive attention is related to monotonous and less varied learning methods, thus making students less interested in following lessons. As a result of monotonous and less varied learning, students feel bored and lazy because learning methods tend to be passive, and this has an impact on reducing their motivation and enthusiasm for studying.

The right strategy to solve this problem is to integrate music in learning numeracy, through musical instruments, one of which is the pianika musical instrument, which can be the right solution to the problem of students' low understanding of numeracy because this musical instrument helps students in the learning process in a better way. fun and practical. By using the pianika musical instrument, students not only learn the concept of numbers theoretically, but also apply it in a real context, namely music. When students play the piano, they have to understand and calculate the duration of each note, which actually involves math. This means, when they learn music, they also indirectly learn about the concept of numeration, such as addition, subtraction, or counting the beats in a song. Apart from that, the pianika musical instrument helps make learning more interactive and less boring. Usually, students often feel bored with mathematics lessons which tend to be conventional. However, by playing music, they are very interested and motivated. The pianika musical instrument provides a different atmosphere, where students can learn while playing, and this makes it easier for them to absorb and understand the material. This media is very suitable for overcoming boredom in class and increasing students' learning motivation. So, through the piano instrument, students can be more focused and interested in understanding the concept of numeracy, so that the problem of difficulty in learning mathematics can be resolved. The learning process becomes fun and effective, because they learn in a more creative way.

2. RESEARCH METHOD

Methods for developing exercises in learning numeracy using the pianika musical instrument are designed to integrate the concept of numeracy with music in an interactive way. This approach utilizes Exercises that focus on the experience of rhythm, counting, and pitch patterns, which naturally have a relationship to numerical concepts. By using a pianika musical instrument, students not only learn to play notes, but learn to calculate duration, follow certain rhythmic patterns, and understand mathematical structures through specific musical experiences. Exercise development by gradually adjusting the level of difficulty, from basic to more complex exercises, to suit student abilities. This exercise is

designed to help students understand numeration directly with a more practical and fun approach, while increasing their learning motivation in the process. This research uses the pianica musical instrument as a means to teach numeracy programs to fifth grade students in.

3. RESULTS AND DISCUSSION

This service aims to improve students' abilities in numeracy, where students are trained to understand, use and apply mathematical concepts and skills in everyday life. This includes basic skills such as counting, measuring, understanding patterns and solving problems involving numbers and numbers. data. Numeracy is more than just mathematics, it is about how a person can use mathematical knowledge in real situations to make decisions and solve problems. Based on the results of interviews and observations at UPTD SD INPRES BEIPOSOS, there were many problems experienced by students, especially in their understanding of numeracy. According to Andriani & Rasto (2019) in (Surakarta, 2022) that learning motivation can be interpreted as a driving force to carry out certain learning activities that comes from within oneself and also from outside the individual so as to foster enthusiasm for learning. Therefore, campus program students teach using student learning methods in numeracy using musical instruments. The musical instruments are the facilities at the school. The following are techniques and ways to implement learning numeracy movements through 3 stages, namely the planning stage, implementation stage and evaluation stage, on the piano musical instrument.

3.1 Planning Stage

On the pianica musical instrument we apply the basic technique in playing it, namely the C major scale consisting of the notations- do (C), re (D), mi (E), fa (F), sol (G), la (A), si (B), and return to do (C). Each note can be numbered from 1(do) to 7(si). By playing this scale, students can understand the sequence of numbers in the C major scale. Numeration by playing the piano, while reading the number notation on the blackboard. This learning method combines musical skills with number learning. In this activity, students play the piano musical instrument based on the number notation written on the blackboard. Each number represents a specific note in a musical scale, and students will follow the sequence of the numbers to play the melody. The technique is as follows:

1. Preparation. In this preparation, the campus team teaches to write number notations on the blackboard, for example number notations from 1 to 7 which represent the scales do, re, mi, fa, sol, la, si, do, this makes it easier for students to understand by playing the number notations on the board write. Students play while listening and reading the number notation on the blackboard.
2. Instructions. The campus team teaches to explain numbers and musical notation, number 1 (DO), number 2 (RE), number 3 (MI), number 4 (FA), number 5 (SOL), number 6 (LA), and number 7 (SI). These numbers are written in a certain order on the blackboard to form a simple melody.



Figure 1. Numeracy playing the piano, while reading the number notation on the blackboard

3.2 Implementation Stage

1. Numeration by playing simple scales

At this stage the campus team teaches using children's songs that are easy to play, for example the song My Balloon or the Rainbow. By writing the sheet music on the board using number notation. By using this method, each student is not only focused on reading the number notation on the blackboard, but students also count the beats. Each song has a bar or beat that must be followed. In children's songs there are 4/4 bars, with this students can count the beats of each bar. This way they not only learn music, but strengthen their numeracy skills.

2. Numeracy through a game approach

In this method, the campus team teaching at UPTD SD INPRES BEIPOS0 applies a note guessing game. This game aims to increase students' interest in applying numeracy using musical instruments at UPTD SD INPRES BEIPOS0. In this game, students are asked to guess the number notation of the sound played on the piano by the campus teaching team. This method is very fun, seen from the students' enthusiasm for this game and makes it very easy for students to understand number notation.



Figure 2. Numeration by playing simple songs

3.3 Evaluation Stage

At this stage the campus teaching team conducted questions and answers and discussions, by asking students several questions related to the concept of numeration, such as counting beats, recognizing numbers with tones, and understanding the sequence between numbers and rhythm. For example, "how many beats do you need in one line in this song?" or "what note will be produced if we press the number two key on the piano?". After the question and answer session, we invite students to discuss in groups, where they exchange understandings and learn together. This discussion also provides an opportunity for students who are still confused and don't understand to improve their understanding, with the support of friends who have mastered the material. At the end of the discussion, we provide feedback and clarification on the material and learning model, if the learning model is still not well understood by students.



Figure 3. Discussion and Q&A session to determine student progress

4. CONCLUSION

This campus teaching program produces very significant benefits in improving the quality of education for both students and students. For students, this program also helps improve student numeracy through the use of the piano musical instrument. Meanwhile, for students, this program is useful for increasing their potential and abilities, by exploring knowledge outside the campus environment. The application of learning numeracy movements using the pianika musical instrument has proven to be effective in improving students' understanding of numeracy at UPTD SD INPRES BEIPOS0. Using a piano not only makes it easier for students to understand mathematical concepts, but also increases their learning motivation because the learning atmosphere is more interactive and fun. In the future, it is necessary to continue and develop the numeracy program using the pianika musical instrument that has been carried out, as well as improving supporting facilities, such as musical instruments, as well as involving more parties such as parents or supportive communities to increase student numeracy. Apart from that, to develop numeracy, not only through the piano instrument, but also through other musical instruments, because learning through music is very interactive and fun.

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