

Introduction to Android-Based Numerical Learning at SD Muhammadiyah 2 Waru Sidoarjo

Nuril Lutvi Azizah^{a)}, Vevy Liansari

Department of Informatics, Universitas Muhammadiyah Sidoarjo, Sidoarjo, Indonesia

^{a)}Corresponding author : nurillutviazizah@umsida.ac.id

Abstract

Numeracy learning in SD Muhammadiyah 2 Waru Sidoarjo still uses conventional methods, namely by using lectures and manual practice questions. In the current technological era, android-based learning is needed in accordance with the times so that learning numeracy feels more fun for students. In fact, playing games on gadgets will be more fun than learning at conventional schools. Therefore, the introduction of more modern numeracy media through android-based learning can increase student interest through indirect learning. According to the survey, as many as 50% of students at SD Muhammadiyah 2 Waru Sidoarjo do not like numeracy because of many factors including the difficulty of understanding manual calculations. The purpose of this activity is to introduce numeracy learning that is more fun through Android-based numeracy media. The method used in the introduction of android-based numeration media is a quantitative method by taking a sample of students at SD Muhammadiyah 2 Waru Sidoarjo as many as 15 students consisting of grades 1, 2, and 3. The introduction of Android-based numeracy learning is done by providing knowledge to students and introducing Android-based numeracy applications. The results obtained from this dedication are that students know the android-based numeration application and students are more interested in learning numeracy which is more fun as well as games found on gadgets.

Keywords: Numeration, Conventional, Modern, Android

INTRODUCTION

As a result of the Covid-19 pandemic, it has had an impact on reducing literacy and numeracy skill in low-grade elementary school children, namely grade 1 to grade 3. In General, low-grade elementary school children have experienced a decline in literacy and numeracy after the Covid-19 pandemic. This is because the students are rarely trained when they are only at home. (Ningsih & Alpusari, 2019). Compared to literacy, the numeracy skills of low-grade elementary school students at Muhammadiyah 2 Waru Sidoarjo Elementary School have decreased by around 50% after the Covid-19 pandemic as a result of the Covid-19 situation. Likewise, the results of a survey that was conducted on low-grade children at SD Muhammadiyah 2 Waru Sidoarjo, the survey results stated that 50% of low-grade students did not like numeracy subjects due to several factors. Factors that cause students to be reluctant in numeracy lessons include the difficulty of students knowing basic formulas, students rarely practicing, and the difficulty of students understanding numerical problems manually. In accordance with the curriculum, the community service team tries to adapt learning by making numeracy learning media fun for students through an Android-based flashcards application (Kumamoto, 1972).

Previous research has discussed the Use of Early Grade Literacy Media in Elementary Schools (Sukma et al., 2020) with the aim of training teachers in using early grade media literacy in elementary schools. In previous research, it focused more on literacy skills, while the Community Partnership Program that will be carried out tends to focus on the numeracy abilities of low-grade students (grades 1 to 3) due to decreased numeracy skills among low-grade students at partners' places at SD Muhammadiyah 2 Waru Sidoarjo. Numeracy lessons are really needed by students as part of everyday life which cannot be separated from calculations and numbers. Numeracy is a knowledge, skill, and behaviour that students need to use mathematical abilities in various situations (Ashri & Pujiastuti, 2021), including the introduction and understanding of mathematics

in the world, as well as having the ability to use this knowledge and skills in accordance with its goals (Kementrian Pendidikan, Kebudayaan, 2021). The relationship between numeracy and mathematics ability can be seen from the concept and its implementation, numeracy and mathematics have a close relationship in terms of the core and the underlying ideas (Tunas et al., 2021). Numerical ability is one of the basic competencies tested in AKM. As a form of assessment of learning processes and outcomes, AKM aims to provide information related to student competency levels which will later be used by teachers to compile and design future learning (Nurina Ayuningtyas, 2020). In learning mathematics, students cannot only learn to remember but also need direct practice (Adnan.K, Afandi F, 2021).

Based on the results of a review of several literature reviews, the service team found several problems in the lower grades, especially grades 1 to grade 3, in terms of numeracy (counting). The various kinds of problems found are described as follows: 1) some students do not know numbers, 2) some students cannot write numbers correctly, 3) students find it difficult to learn numeracy manually, 4) students feel bored with manual and conventional techniques taught (Liansari & Azizah, 2022) (Umar & Widodo, 2022). From the problems previously described, this shows that generational changes affect student learning styles. Learning in the 80s used manuals so that the current Z generation should use technology that makes students enjoy learning without coercion from any party.

The goal to be achieved in this community service activity is to introduce android-based numeracy media as a medium for learning numeracy for students in low grade elementary schools (Mayangsari & Nurrachman, 2021). In addition, the hope of introducing this application is to make it easier for low-grade students at SD Muhammadiyah 2 Waru Sidoarjo to learn numeracy through an interesting and fun Android-based application with more modern teaching material. Utilization of this Android-based media can be done in schools through the assistance of teachers or instructors with the assistance of parents (Hidayat & Iswari, 2018), so that the desired target is the ability of students' numeracy can increase.

METHOD

At the beginning of the implementation until the end of the implementation of activities carried out a quantitative approach. The approach used is a quantitative approach. Partners in this Community Partnership Program are SD Muhammadiyah 2 Waru Sidoarjo which consists of a sample of 15 students which is applied to low grade students (grades 1 to 3). The approach and method offered to solve the problem is to carry out a thorough training, namely theory and hands-on practice. The implementation method is carried out through the method stages in the flow chart as follows:

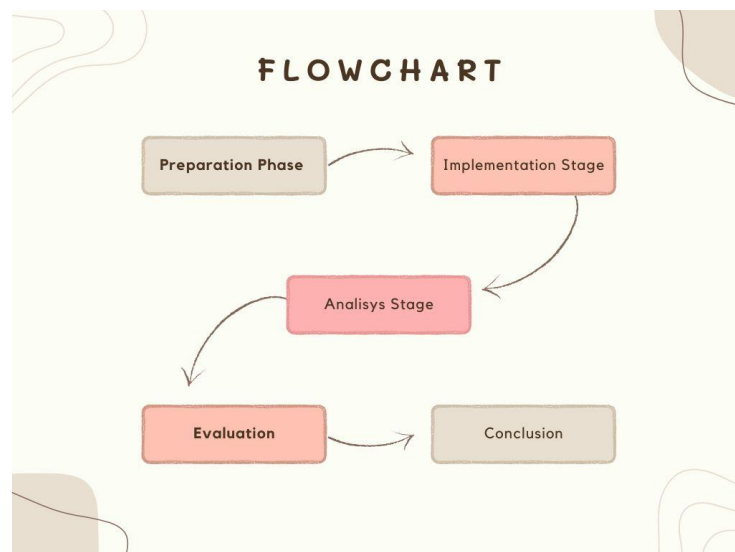


Figure 1. Flowchart of Method

In figure 1 is a flowchart of the implementation method which is described as follows

- Preparation Phase
 - At this stage several activities were carried out including the following
 - Compile job-sheets as a guide for implementing activities for the community service team, and training participants, namely low-grade students. The job-sheet is used as a guide for teams and teachers to introduce students to Android-based media.
 - Compile material in the form of PowerPoint which contains material. PowerPoint contains procedures for using Android-based teaching media.
 - Arrange pre-test and post-test for low grade students. Pre-test and post-test are given to measure the ability level of each student taken randomly.
- Implementation Stage
 - Provide worksheets that have been made to the participants (a total of 15 low grade students) as reference material during the training activities.
 - Presentation of initial material regarding numeracy.
 - Introduction to using Android-based numeration media.
 - Giving a pre-test before the activity takes place.
- Analysis Stage
 - Giving a post-test to low grade students (a total of 15 low grade students).
 - Analyze the results of the pre-test and post-test that have been given to students
- Evaluation Stage
- Conclusion of the program
-

RESULT AND DISCUSSION

Based on the problems previously described, the results and discussion of this service based on the solutions and targets that were planned before are as follows:

- On December 16, at 08.00, a socialization activity was carried out with partners, namely the principal of SD Muhammadiyah 2 Waru Sidoarjo, with detailed results in the form of determining the number of student samples when practicing in training and determining the activities to be carried out
- On 05 February 2023, at 09.30-11.30 a training was conducted on the utilization of learning media using android-based flashcards in the hall of SD Muhammadiyah 2 Waru Sidoarjo with a total of 15 students as a sample consisting of students in grade 1, grade 2 and grade 3 respectively -each numbered 15 students. The results obtained in this activity include introducing media to students and companions or teachers, administering pre-tests and post-tests for students, and evaluating activities.
- From the results of the training survey and the questionnaire that has been given, the results of a comparison between conventional methods and modern methods are obtained. The conventional method applied by the Muhammadiyah 2 Waru Sidoarjo Elementary School in learning numeracy, namely through rote learning and lecture systems and practice questions in class through conventional media is less effective so that other, more modern supporting media are needed.
- The modern method given in community service is a numeracy learning method using an Android-based numeration game media that students can use to study either at home or at school or as a medium for teachers/assistant at school.

The following is a documentation of community service activities carried out at SD Muhammadiyah 2 Waru Sidoarjo:



Figure 2. Muhammadiyah Sidoarjo University Community Service Team at Mitra's place
In Figure 2, it is a UMSIDA community service team that is at a partner's place, namely Muhammadiyah 2 Waru Sidoarjo Elementary School to conduct a service to introduce android-based numeracy media at Muhammadiyah 2 Waru Sidoarjo Elementary School.



Figure 3. Android-Based Numeral Media Introduction Activities

Figure 3 is a documentation of activities at the time of introducing more modern supporting media for numeracy subjects using Android-based media, the name of the application used is "deck numerix" which is a math card designed through an Android application.



Figure 4. Pretest to Measure Students' Initial Ability

Figure 4, an activity carried out by giving pre-tests to students to find out the initial abilities of low-grade students at SD Muhammadiyah 2 Waru Sidoarjo. Pre-test is given at the beginning of the activity before the core event of introducing android-based media to low grade students.

CONCLUSION AND RECOMMENDATION

- In the implementation of community service at SD Muhammadiyah 2 Waru Sidoarjo, the introduction of android-based numeracy media to low grade students has a positive impact on the numeracy development of low-grade elementary school children.
- 15 low grade students consisting of a sample of grades 1, 2 and 3 feel interested and enjoy learning using modern media. Students feel happy because learning numeracy is like playing activities on fun gadgets. Students are interested in Android-based numeracy media because it looks good and attractive accompanied by pictures and sound.
- Students and companions (teachers) support the existence of Android-based numeracy media which can improve the learning abilities of low-grade students in elementary schools, because it can be flexible and can be learned at home or at school with assistance.
- The activity of introducing Android-based numeracy media has the effect of increasing students' interest in learning numeracy which is more fun through numeration games contained in Android-based media
-

ACKNOWLEDGEMENTS

Our gratitude to the Muhammadiyah Research Grant 2023 (RISETMU BATCH VI 2023) which has supported funding in community service carried out at SD Muhammadiyah 2 Waru Sidoarjo. Thank you to the team of teachers as well as the principal of SD Muhammadiyah 2 Waru Sidoarjo who have provided facilities and cooperation so that the learning introduction event Android-based numeracy can run smoothly.

REFERENCES

- Adnan.K, Afandi F, J. M. (2021). *Hubungan Kemampuan Literasi Numerasi dengan Hasil Belajar Matematika Siswa Kelas V SD Gugus II*. 423–430.
- Ashri, D. N., & Pujiastuti, H. (2021). Literasi Numerasi Pada Pembelajaran Tematik Terpadu Di Kelas Rendah Sekolah Dasar. *Jurnal Karya Pendidikan Matematika*, 8(2), 1–7.
- Hidayat, A., & Iswari, N. M. S. (2018). Rancang Bangun Spaced Repetition Software untuk Menghafal Huruf Jepang Menggunakan Algoritma Supermemo 2 Berbasis IOS. *Jurnal ULTIMA InfoSys*, 9(1), 32–36. <https://doi.org/10.31937/si.v9i1.846>
- Kementerian Pendidikan, Kebudayaan, R. dan T. (2021). Modul Literasi Numerasi Di Sekolah Dasar. *Modul Literasi Numerasi Di Sekolah Dasar*, 1, 22. [http://ditpsd.kemdikbud.go.id/upload/filemanager/2021/06/2 Modul Literasi Numerasi.pdf](http://ditpsd.kemdikbud.go.id/upload/filemanager/2021/06/2%20Modul%20Literasi%20Numerasi.pdf)
- Kumamoto, J. (1972). *Vocabulary Trainer Using an Online Flashcard Site*. 1–8.

- Liansari, V., & Azizah, N. L. (2022). The Relationship between the Use of Active, Innovative, Creative, and Fun Learning Techniques and Online English Learning by Multidisciplinary Students. *KnE Social Sciences*, 2022, 18–23. <https://doi.org/10.18502/kss.v7i10.11205>
- Mayangsari, M.D., & Nurrachman, D. (2021). Kiat Pembelajaran Daring di Era Covid-19 Sebagai Upaya Penerapan Psikologi Pendidikan Pada Proses Belajar Siswa SMP, *Jurnal Pengabdian ILUNG (Inovasi Lahan Basah Unggul)*, 1(1), 125-133.
- Ningsih, H. S., & Alpusari, M. (2019). Identifikasi Faktor-Faktor Yang Mempengaruhi Literasi Siswa Sekolah Dasar Kelas Rendah. *Jurnal Riset Bisnis*, 3(1), 66–74.
- Nurina Ayuningtyas, D. S. (2020). 1, 2 1,2. *Delta-Pi: Jurnal Matematika Dan Pendidikan Matematika*, 9(2), 237–247.
- Sukma, E., Indrawati, T., & Suriani, A. (2020). Penggunaan Media Literasi Kelas Awal di Sekolah Dasar. *Jurnal Inovasi Pendidikan Dan Pembelajaran Sekolah Dasar*, 3(2), 103. <https://doi.org/10.24036/jippsd.v3i2.107623>
- Tunas, A., Mariamah, M., Suciwati, S., & ... (2021). Kemampuan Numerasi Siswa Sekolah Dasar Ditinjau Dari Jenis Kelamin. *Tunas: Jurnal* 01, 17–19. <https://jurnal.fkip.unmul.ac.id/index.php/tunas/article/view/818%0Ahttps://jurnal.fkip.unmul.ac.id/index.php/tunas/article/download/818/521>
- Umar, U., & Widodo, A. (2022). Analisis Faktor Penyebab Rendahnya Kemampuan Akademik Siswa Sekolah Dasar di Daerah Pinggiran. *Jurnal Educatio FKIP UNMA*, 8(2), 458–465. <https://doi.org/10.31949/educatio.v8i2.2131>