

EMPOWERMENT OF STUDENTS WITH DISABILITIES AND FAMILIES IN UNDERSTANDING THE LEARNING PROCESS AT SDN 03 KEDOYA UTARA

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ABSTRACT

The purpose of this service activity is to empower inclusive schools by utilizing mobile-based interactive learning media to understand the concept of integer multiplication at SDN Kedoya Utara 03. State Elementary School (SDN) Kedoya Utara 03 is one of the inclusive schools in West Jakarta City with 12 students with disabilities (learning difficulties, slow learning, and low mentally disabled). However, only 2 students with learning disabilities (learning difficulties, slow learners) participated in this activity according to their parents' permission. The mobile-based interactive learning media that we teach is the Math Games application: Math for Kids, for planting the concept of multiplication with animations made with programming languages. The implementation methods used in this activity are (1) preparation (Introduction, Education), (2) Implementation (Learning, Workshop, Assistance), and (3) Evaluation (Understanding, Recognition). Based on the results of this activity, there is an increase in understanding of the concept of number multiplication in students with disabilities and workshop activities for children and teachers run well, which is evidenced by enthusiastic teachers practicing the Math Games application: Math for Kids. This activity can be used as a reference material for learning other materials, especially multiplication of whole numbers in other schools.

Keywords: Inclusion School, Mobile Learning Applications, Mathematical Learning

1. INTRODUCTION

Special education is part of the national education system that provides special attention for students who have difficulty in following the learning process due to various physical, emotional, mental and social disorders, as well as having the potential for special intelligence and talent (UNDANG-UNDANG RI 20 TAHUN 2003 TENTANG SISTEM PENDIDIKAN NASIONAL, 2003; PP RI NO 19/ 2005 TENTANG STANDAR NASIONAL PENDIDIKAN, 2005; PP RI NO 57 TAHUN 2021 TENTANG STANDAR PENDIDIKAN NASIONAL, 2021). The government seeks to realize equitable education for children with special needs and normal students through inclusive education.

In order to improve mathematics learning in inclusive classes, the Community Service Team (PKM) will empower Inclusive Schools by utilizing mobile-based digital technology and manipulative props. The solution offered is training in the use of math learning aids and assistance to teachers at SDN Kedoya Utara 03, especially in teaching the concept of whole number multiplication to students with disabilities (PERATURAN MENTERI PENDIDIKAN NASIONAL RI NO 70 TAHUN 2009 TENTANG PENDIDIKAN INKLUSIF, 2009).

The props that will be used are props that match the animation in the digital learning media with the Math Games application. The use of these props aims to make it easier for students to understand concepts through direct practice, focus students' learning concentration, and train students' visual and reading fluency. These props and digital learning media are also interesting for students, especially for children with disabilities, because in addition to learning, students will also play. Students with disabilities in this activity are slow learners and have mild mental disabilities so they can train students' learning concentration and attract slow-learning students because they manipulate real objects directly and learn with games. This is in accordance with the opinion of (Dea Rizka Amalia et al., 2022; Kapitang et al., 2023; Mayangsari et al., 2020) that if math concepts are taught with games, students will be more interested in learning.

The Community Services team will develop a mobile-based math learning application called "Math Games." This application will be developed with visual programming so that it can be used by students, teachers, and parents without having to master the syntax of complicated programming languages (Uswatun Nisa, 2022). In this application, animations and manipulative props will be provided in accordance with the learning material. The use of this application aims to make it easier for students to understand concepts through direct practice, increase learning concentration, and train visual, reading, and counting skills, especially for students with special needs in inclusive classes.

In addition, the Community Services team will also provide manipulative props that match the animation in the Math Games application. These props will help students with special needs to understand the concept of number multiplication concretely through the manipulation of objects. The use of props and digital learning media is expected to increase the learning interest of students with disabilities and improve their learning concentration (PERATURAN MENTERI PENDIDIKAN NASIONAL RI NO 70 TAHUN 2009 TENTANG PENDIDIKAN INKLUSIF, 2009). In addition, training will be provided to teachers to optimize the use of applications and manipulative props in the learning process.

The purpose of this service program is to empower Inclusive Schools by utilizing mobile-based digital learning and manipulative props to understand the concept of integer multiplication in accordance with the Guidelines and RIP of Mercu Buana University (LPPM Universitas Mercu Buana, 2021, 2023).

2. METHOD

The inclusive school development activities at SDN Kedoya Utara 03 focused on class IV and involved 12 students with disabilities, including students with learning difficulties, slow learners and mildly retarded students. Only two students with disabilities were allowed to participate, a slow learner and a mildly retarded student.

The planning stage involved introduction and education, including observation in class IV at SDN Kedoya Utara 03 to identify children with special needs. Interviews were conducted with the school principal, the head of elementary school learning at the education office, and the fourth-grade teacher as the teacher in the inclusive class. Educational activities include training on the use of mobile-based digital learning media and manipulative props in understanding the concept of whole number multiplication, visual ability, and reading ability.

The implementation stage includes learning practices and workshops. The practice of using mobile-based digital learning media and manipulative props is done through direct learning for each student with disabilities. Workshops were conducted for inclusive primary school teachers, where they were introduced to the use of manipulative media and mobile-based digital learning.



Figure 1. Preparation meeting



Figure 2. Distribution Pre Test

In this implementation, there are several criteria that will be the basic benchmark for the achievement of this activity, namely:

1. Preparation and distribution of Pre-Test

In this activity, the test is given in the form of math problems in the form of multiplication for grade IV students, with the aim of knowing how far the ability of students with disabilities of SDN 03 Kedoya Utara in mathematical understanding and practice.

2. Making and preparing post-tests and evaluating the results

In this activity, the post-test is given in the form of math problems in the form of multiplication for grade IV students using digital learning media with the Math Games application, with the aim of knowing the level of understanding of students with disabilities at SDN 03 Kedoya Utara in mathematical understanding and practice.

3. RESULTS AND DISCUSSION

Community service activities were carried out by lecturers from the Faculty of Computer Science, Universitas Mercu Buana and the Faculty of Communication Sciences, Esa Unggul University, which were held on Saturday, June 21-22, 2023, directly. The partners of this activity are children who are members of the inclusion class at SD NEGERI KEDOYA UTARA 03, Jl. Kedoya Raya RT.012/06 No.2, North Kedoya Village, Kebon Jeruk Sub-district, West Jakarta City, D.K.I. Jakarta Province to improve the ability to understand mathematics for children with disabilities through digital devices and applications, in this service activity, the team of community services applies the Math Games application, which is available on Smartphones, because this application is easy to learn in supporting mathematics learning for children with disabilities.



Figure 3. Learning Activity Modul



Figure 4. Learning Material

From a series of activities to empower inclusive schools by utilizing interactive learning media at SDN 03 Kedoya Utara, here is the realization of community service activities for children with special needs at SDN 03 Kedoya Utara. The following are the implementation activities that the service team carried out, namely:

1. Introduction and education activities



Figure 5. Education activities

In this activity, an explanation is given regarding learning math with multiplication assisted by a smartphone-based application, Math Games, to help students with disabilities at SDN 03 Kedoya Utara. The service team prepared 2 modules, namely modules for student learning and modules for assistance for teachers. Before entering the implementation stage, the students were given a pre-test first, with the aim of

In this section, the findings should be separated by discussion. Findings or research results are not raw data, but data that has been processed/analyzed by certain methods. The discussion is the result of interpretation of data analysis, if necessary linked to relevant scientific theories/concepts in the literature review. Findings and discussions must answer the formulation of the problem and have the impact of new knowledge. The contents of the findings and discussion can be in the form of an interpretation of the results of the discussion.

2. Mentoring Activity

This activity was carried out from 10:00 a.m. to 11:30 a.m., starting with helping students install the application and then accompanying them to use the application on mobile devices. This activity was a little difficult because of the different abilities of each student in understanding the learning stages. However, the teachers of SDN 03 Kedoya Utara readily assisted the team in assisting the application learning. Then a simulation was carried out with several questions that the team had prepared in the module, to train students on the ability to adopt assistive technology for learning.

The final stage of a series of community service activities is monitoring and evaluation. In the activity of assisting the fourth-grade student study group of SDN 03 Kedoya Utara, the whole process went well and received a positive response from the principal, teachers, and students. implementation, and evaluation stages. The monitoring results

showed that each activity went according to plan. The estimation of funds and time did not change much, the material was delivered well, and the implementation was in accordance with the agreed schedule.

Evaluation is also carried out on the mentoring participants after the activity, to identify shortcomings and find improvement solutions. The success of the study group mentoring can be seen from the test results after the activity, especially in math. There was an increase in understanding of concepts and the ability to work on school problems, which was reflected in the increased pretest and post-test scores.



Figure 6. Mentoring Activity



Figure 7. Post-test Distribution

Monitoring is carried out at the introduction and education,

In addition to the final test, interviews with the principal and students were conducted after the service activity. The results showed that students felt that the learning assistance activities were very useful and fun.

The math learning assistance method, using digital application tools, provides direct experience to students and can improve students' mathematical communication skills. Previous research also shows that this approach has the right contribution and can significantly improve student scores from one cycle to the next (Dea Rizka Amalia et al., 2022; Rian Hidayat & Sartika Sari, 2023; Rika Perdana et al., 2022).

4. CONCLUSION

There are 3 activities, namely educational activities, assistance in using math learning aids with the Math Games application and evaluation of activities that have been carried out by a team that is fully supported by community service partners, namely SDN 03 Kedoya Utara who actively participate to fully support community service activities that have a significant impact on ABK (Children with Special Needs) in inclusion classes. Several other partners, namely Esa Unggul University and parents of students who expressed full support in the midst of the enthusiasm of the community service team to succeed in community service activities with the aim of Empowering Inclusive Schools with the Utilization of Interactive Learning Media, are SDN 03 Kedoya Utara which is a reference school appointed by the Government in managing ABK classes, Indicators of the success of this community service activity include: quantitatively can be seen from the results of the post-test which shows a value more than the pre-test results. And qualitatively conveyed that.

The enthusiasm of Higher Education Partners, Support from the Principal and teachers at SDN 03 Kedoya Utara, the enthusiasm of parents of children with disabilities, and the enthusiasm of students with disabilities.

In every service activity, it is proven that this can be realized, even the very big hopes of the teachers at SDN 03 Kedoya Utara and the parents of children with disabilities want continuous cooperation in terms of assisting children with disabilities through parental assistance activities and the application of IT for stimulating the growth and development of children with disabilities in order to achieve the quality of education for children with disabilities.

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