

## **Utilization of Number Lines Through the Peer Teaching Method In Student Learning with Hearing Impairments**

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**Abstract:** This research aims to describe the utilization of number line media through peer teaching methods in student learning with hearing impairments. This study used an action research design with research participants of class III SLB B Karnnamanohara Yogyakarta. The data collection techniques used in this study were participative observation, field notes, interviews, and documentation. Data analysis used data triangulation techniques. The results showed that (1) Teachers and students could be assisted in the learning process using number line media through the peer teaching method. (2) The peer teaching method combined with number line media helps to establish interactions between teachers and students in the learning process. (3) Student learning outcomes in Mathematics can achieve KKM scores after using number line media through the peer teaching method.

**Key words:** number line; peer teaching; students with hearing impairments

### **INTRODUCTION**

One of the individuals with a disability is a child with hearing impairment. Children with hearing impairments are children who have hearing limitations due to the malfunction of the hearing organs. The experience of children with hearing impairments will be different from those of hearing people, they have less experience with things that are related with auditory or additive in nature. The cognitive aspects of children with hearing impairments are potentially the same as those of children in general, but functionally, their development is influenced by the level of language skills and limited information, thus hindering the process of achieving broader knowledge and impacting cognitive development (Somantri, 2007, hlm. 24).

Based on limitations and obstacles experienced by children with hearing impairments, is needed to provide an education for them. In practice in the field, education for children with special needs, especially children with hearing impairments in special schools, still faces various obstacles. During the observation that the researchers conducted at Karnnamanohara Special School B Yogyakarta regarding Mathematics Subjects in grade III SD on basic arithmetic operations, it was found that there were not many learning media developed to support the delivery of these materials. The development of concrete learning media is needed to accommodate the abilities and needs of students with hearing impairments.

In addition to the development and utilization of learning media as a means of support in the learning process, cooperation between students with hearing

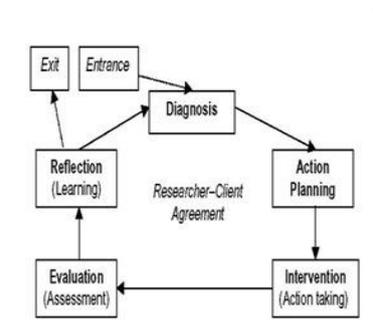
impairments also needs to be developed in learning to create interactive learning and train cooperation between students. Various methods can be applied to create a learning atmosphere that can build interaction between students, one of which is the tutoring method or peer teaching.

Peer teaching means that students teach other students or those who act as tutors are students. The peer teaching method is a cooperative learning strategy in which mutual respect and understanding are fostered among students who cooperate.

During the pre-cycle observation, data was obtained that in the basic arithmetic operation material for Mathematics in class III Karnnamanohara special school only 58% of students had reached the set KKM score. Also, during the learning process students tend to be passive and less interaction with teachers and other students.

There needs to be an increase in the achievement of student KKM scores and activeness and interaction in learning through the use of concrete media and appropriate methods. Without the use of concrete media and methods that can encourage interaction in learning, the problems mentioned above will have an increasingly complex impact on the inhibition of learning outcomes and obstruction of social development in students which can exacerbate the impact of hearing impairment they experience.

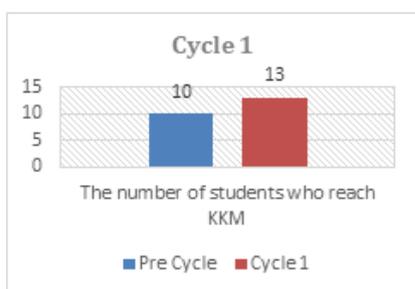
Based on these problems, the researchers are interested in carrying out research entitled "Utilization of Number Lines through the Peer Teaching Method in Student Learning with Hearing Impairments".



**Figure 1. Siklus Action Research (Davison, Martinsons & Kock (2004))**



**Figure 1. Number Line Media**



**Figure 3. Grafik Achievement of KKM Cycle 1**

**METHOD**

This research was conducted by using an action research method. Cresswell (2008) defined action research as applied research that focuses on certain actions.

In this action research, the researcher collaborated with the teacher to carry out action research with the research participants of all class III students of SLB B Karnnamanohara Yogyakarta which total 17 students.

The following are the stages of action research taken in this study, figure 1.

This research was conducted in 2 cycles with 4 meetings per cycle. The stages of each cycle carried out in this study are as follows:

*Diagnosing*, In this stage, the researcher collaborates with the teacher to make diagnoses related to the main problems identified in the implementation of Mathematics learning in Class III SLB B Karnamanohara to develop learning to solve problems faced by teachers and students.

*Action Planning*, In this stage, the researcher collaborates with the class teachers to understand the main problems in learning Mathematics in Class III SLB B Karnamanohara and continue with compiling the right action plans to solve the problem.

*Action taking*, The researcher collaborates with the teachers to implement the action plans that have been prepared. In this case, the actions taken in the second cycle are improvements from the implementation in the first cycle.

*Evaluating*, After the actions taken in learning mathematics in each cycle are deemed sufficient, then the researcher and the teacher evaluate the results of the actions taken to reflect/learn.

*Learning*, This stage is the final part of the cycle in the form of a reflection of the actions that researchers and teachers have done before. This learning activity includes a review of the Mathematics learning stages that have ended for then the researcher and the teacher agree on the end of the research carried out.

**FINDINGS AND DISCUSSION**

**Findings**

This study used action research with 2 cycles using number line media through a peer teaching method to all third-grade students of SLB B Karnnamanohara Yogyakarta. Here are the results of each cycle:

*Cycle 1*

In the implementation of cycle 1 in this research, during 4 meetings the researcher collaborated with the teacher using the use of number line media in teaching addition and subtraction material in Mathematics Subjects. Figure 1 below is a picture of the number line media used in cycle 1 of this study.

Figure 1 above is a sketch of the number line media used in this study.

In this cycle, the teacher and students are helped during the learning process. Students are more motivated during the learning process and always try to be involved in the use of number line media. Students can better master the basic arithmetic operations competency of addition and subtraction that the teacher teaches. The student’s competence in completing the addition and subtraction of the basic nose surgery was proven by 13 students who achieved the KKM score (70). It means that the number of students who achieved the KKM score increased from 58% to 76% compared to before using number line media in the delivery of basic arithmetic operations. Graph 1 below illustrates the achievement of the KKM value in cycle 1 that has been implemented.



**Figure 4.** above is the implementation of cycle 1 in this study.



**Figure 5.** above is the implementation of cycle 2 in this study.

The enhancement in the number of students who achieved the KKM score in cycle 1 of this study proved that there was a significant increase in student learning outcomes. However, in cycle 1 there were still 4 students who had not reached the KKM score. Besides, the interaction between students in learning has not been established. Figure 3 below shows how the learning process uses number line media, but it is still constrained by the absence of interaction between students in this first cycle.

Students who already understand the basic arithmetic operation material of addition and subtraction tend to want to try again using the number line when the teacher allows students to complete the given practice questions. This condition makes students who do not understand the basic arithmetic operation material of addition and subtraction only to listen and sometimes choose to do other activities. This has an impact on the exclusion of them during the learning process.

Based on these problems, researchers and teachers agreed to make improvements in the learning process in the advanced cycle to overcome problems related to student interaction in addition to helping all students achieve the set KKM scores.

### *Cycle 2*

In the second cycle, the material taught are the multiplication and division counting operations. This material is a continuation of the previous first cycle material, namely the basic calculation operations material for addition and subtraction.

In the implementation of cycle 2 which was carried out in 4 meetings of Mathematics Subjects, the basic arithmetic operations material of the use of number line

media used in cycle 1 was still carried out considering that the media could help teachers and students during the learning process. Also, in cycle 2 the researcher collaborated with the teacher to apply the peer teaching method during the learning process. This peer teaching method is intended to overcome problems related to the lack of interaction between students in cycle 1. In cycle 2 the peer teaching method applied can provide enrichment for students who have reached the KKM score to help students who have not reached the KKM score.

Problems related to interactions between students in the learning process can be resolved in this second cycle. During the learning process, good cooperation between students through the applied peer teaching method can overcome the problems that occurred in the first cycle. Figure 4 below shows the cooperation and interaction between students that were established through the peer teaching method in the second cycle.

The results in this second cycle indicate that there is an increase in student learning outcomes as indicated by an increase in the number of students who reach the set KKM score. In cycle 2, all students (100%) are able to achieve the KKM score. This shows the addition of 4 students compared to the first cycle of only 13 students. Graph 2 below illustrates the number of students who achieved the set KKM score.

Because the indicators of success in this study have been achieved, the researcher who collaborated with the teacher agreed to stop the cycle in this study until the second cycle.

## **Discussion**

The use of number lines and peer teaching methods that the teacher applies in the delivery of basic arithmetic operations teaching material for students with hearing impairments in class III Karnamanohara special school is proven to help the learning process. Teachers can innovate more in conveying material and students can better master the expected competencies.

Based on the results of this study, it can be seen that the use of number line media with the peer teaching method can improve student learning outcomes. Students with hearing impairments need media that is by their characteristics, in this case, visual-based media is needed because students with hearing impairments experience hearing impairments so they must maximize their sense of sight. Also, the selected media can concretize an abstract concept. The difficulty of students with hearing impairments in understanding abstract concepts requires the teacher to use media that can minimize these abstract concepts. (Zakia, 2016).

The increase in learning outcomes is also supported by the results of Santoso's (2014) research which

explains that number line media affects improving student learning outcomes. Further strengthening the results of this study, Handayani (2014) in her research related to number line media explained that before using number line media, the child's ability to reduce numbers was low, but after being given treatment (intervention) using number line media, the child's ability to perform reduction operations the odds are increasing. This prove that the child's ability in number subtraction operations can be improved by using number line media.

The results of the study that also corroborate the findings in this study is the research of Adha (2014) which shows that the use of number lines can improve student learning outcomes. Based on the observation indicators of teacher activity and student performance where in the first cycle it is still in the good category, the classical completeness percentage of 69.23% classical absorption reaches 70.38%, in the second cycle it increases into the very good category, the colossal percentage is 84.62% and classical absorption reached 81.92%. Cycle I was obtained in cycle II, it was obtained that this completeness had met the standard of completeness criteria, namely 80%.

The peer teaching method that is applied also plays a role in improving student achievement. Peer teaching helps students with hearing impairments interact in the learning process. Isnainia (2019) explained that social interactions for children with hearing impairments is very influential for their social development. It is necessary to have learning methods and models carried out by teachers to help the social interaction of children with hearing impairments. Based on this explanation, peer teaching is one of the appropriate learning methods. Peer teaching makes learning easier, students participate actively and can solve problems together, so that an equitable understanding of the learning material provided can be achieved (Febianti, 2014).

The findings in this study are also in line with the results of Joni's (2018) study which explains that peer teaching empowers students who have high absorption from the student group themselves to become tutors for their friends, students who become the tutor is in charge of providing learning and training material to friends who do not understand the material or training provided by the teacher based on the rules that have been mutually agreed upon in the group, a cooperative not competitive group learning atmosphere will be built.

Strengthening the results of this study, Widyastuti's research result (2020) explains that peer tutors have a very positive role in the social attitudes of students with hearing impairments. This is proven by conducting observations and interviews conducted by researchers at the school. With the presence of peer

teaching, students with hearing impairments are freer to ask questions and seek information related to what they don't know even though they use certain cues. They are freer and feel less pressure when communicating with their peer tutors. However, if there is a problem that cannot be solved through peer teaching, it will be assisted by a special supervisor for children with hearing impairments.

The results of this study can be used as a material consideration for the teacher, to use concrete media to help students with hearing impairments, such as number line media, to pay more attention to infrastructure and student needs to improve student achievement.

Learning using number line media through the peer teaching method becomes interesting learning for students because with this learning students can increase cooperation between students. Using number line media through the peer teaching method will help accommodate the needs of students in various themed subjects.

## CONCLUSIONS

The conclusion of the results of this study are (1) Teachers and students can be helped in the learning process using number line media through the peer teaching method. (2) The peer teaching method combined with number line media helps to establish interactions between teachers and students in the learning process. (3) Student learning outcomes in Mathematics after using number line media through the peer teaching method achieve the KKM score.

The positive impact of using number line media through the peer teaching method can be used as information and material for consideration regarding the use of media by the characteristics of students with hearing impairments so that students with hearing impairments are expected to learn easier and can improve their learning achievement.

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