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Application Of The Peer Tutor Method In Assisting The Mathematics Learning Process Of Deaf Students

Nungki Anditiasari[1], St Budi Waluya[2], Nuriana Rachmani Dewi[3]
[1, 2, 3]Universitas Negeri Semarang, Gedung A Kampus Pascasarjana
Jl Kelud Utara III, Semarang
Email: nungkianditiasari@students.unnes.ac.id[1],budiw@mail.unnes.ac.id[2],
nurianaramadan@mail.unnes.ac.id[3]

ABSTRACT

This study aims to determine the application of the peer tutor method to the mathematics learning process of 5 deaf students in class X SMALB Negeri Slawi. The method used is the descriptive method. The data collection is done by testing, observation, and documentation. Data analysis was carried out by data reduction, presentation, and conclusion, which is the model of Miles and Huberman. Based on the results of data analysis, it can be concluded that peer tutors provide convenience for deaf students with below-average abilities in working on math problems. This is because deaf students get direction and assistance from deaf students who already understand and act as tutors so they can solve math problems. The application of the peer tutor method facilitates the learning process of deaf students. Students communicate with each other to assist, increase learning activity, and solve problems together it can affect the completeness of the learning outcomes of deaf students. In the learning process, peer tutors can be used as an alternatively appropriate and effective learning method, especially for deaf students.
Keywords : Peer Tutor, Mathematics, Deaf.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui penerapan metode tutor sebaya pada proses pembelajaran matematika 5 siswa tunarungu kelas X SMALB Negeri Slawi. Metode yang digunakan yaitu metode deskriptif. Pengumpulan datanya dilakukan dengan tes, observasi dan dokumentasi. Analisis data dilakukan dengan reduksi data, penyajian dan kesimpulan, merupakan model dari Miles dan Huberman. Berdasarkan hasil analisis data dapat disimpulkan bahwa tutor sebaya memberikan kemudahan untuk siswa tunarungu yang memiliki kemampuan dibawah rata – rata dalam mengerjakan soal matematika. Hal ini dikarenakan siswa tunarungu mendapatkan arahan dan bantuan oleh siswa tunarungu yang sudah faham dan sebagai tutor agar bisa menyelesaikan soal matematika. Penerapan metode tutor sebaya memudahkan dalam proses belajar siswa tunarungu, siswa saling berkomunikasi memberikan bantuan, meningkatkan keaktifan belajar dan dapat menyelesaikan masalah secara bersama – sama sehingga dapat berpengaruh terhadap ketuntasan hasil belajar siswa tunarungu. Dalam proses pembelajaran penggunaan tutor sebaya bisa dijadikan salah satu alternatif metode belajar yang tepat dan efektif khususnya untuk siswa tunarungu.
Kata kunci: Tutor Sebaya, Matematika, Tunarungu.

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PRELIMINARY

The difficulty of students with special needs in understanding lessons can be an obstacle in understanding mathematical concepts and solving problems that require abstract and logical (logic) thinking in line with Putri (2016) that the difficulty of deaf students in understanding something abstract is due to hearing limitations. Deaf students have difficulty learning mathematics, especially the concept of mathematical symbols. Abstract mathematical symbols make it difficult for deaf students to understand. According to Akuba et al. (2020) stated that students have difficulty understanding if a concept is increasingly abstract. In terms of academic achievement, deaf students have less achievement than students in general, this is due to hearing loss that deaf students own. In line with Ashmore (2017), the achievements of deaf students are lower than those of students who do not have hearing impairments.

The learning principle stated in Permendikbud number 22 of 2016 is that in a lesson, anyone can become a teacher, a student, and anywhere can become a class. It can be concluded that it is possible for students to play the role of the teacher so that they can guide other friends and the learning process does not have to be carried out in the classroom because they can also learn anywhere. In addition, in exploring student knowledge, it is not only obtained from teachers and learning resources but knowledge can also be obtained from the environment and with fellow friends.

The subjects to be studied were students of class X SMALB N Slawi. Researchers are expected to understand the characteristics of the subject so that they can apply appropriate learning methods, according to the conditions and characteristics of students. According to Sinabariba (2017) n choosing a learning model, teachers need to know the situations and conditions of their students. Therefore, the researcher wants to apply an effective learning method, namely peer tutoring where the application of peer tutoring is carried out by utilizing students who have superior intelligence in the class to be appointed as mentors for their less intelligent friends. This is adapted to the conditions and characteristics of deaf students.

Based on preliminary observations, it shows that during the learning process for class X mathematics at SMALB N Slawi, the teacher used the lecture method using sign language in conveying material that had been written on the blackboard. Students only listened and worked on the questions. There is no interaction between students during learning, and the teacher also does not apply many learning methods that create interaction between students during mathematics lessons. Language limitations also make it difficult for students to understand what the teacher conveys so that some students need help understanding what the teacher explains. This is due to the various limitations of deaf students, including physical, mental, emotional, and social conditions. Teachers are expected to be able to find the right method for both the characteristics of deaf students and a method that can also increase the learning motivation of deaf students so that students can solve a problem and learning also runs smoothly. According to Utami et al. (2014), hat teachers are required to foster student learning motivation so that students can think critically and be able to solve a problem by selecting the right learning method for students.

Peer tutoring is a method in which students teach or help explain the material to other friends. Students who become tutors have superior abilities or better understand the material than other students. According to Abrianto & Prihatnani (2019), who said that the peer tutor method is that students who are good at class will assist students who are lacking in terms of understanding and receiving lessons. This is also mentioned by Santrock (2008) that peer tutors are beginners whom experts give training.

Surakhmad (1994) said that the peer tutoring method is a learning strategy in helping students to work together with other students. Other students can also become tutors if they have previously studied the material to be studied at school so that during the learning process, these students can become tutors for their classmates. Hal ini seperti yang disampaikan oleh S.W & R, (1987) that peer tutors are students who have difficulty understanding the lesson and will be given assistance by students who have understood the lesson beforehand or who become tutors.

Peer tutoring can also be done when the learning process is over. Students who become tutors can explain the material back to students who still find it difficult or don't understand the material that has been taught in class. The peer tutor method was chosen as a learning method for deaf students because this method is easy for each student to understand. sign language by fellow deaf friends is more easily accepted and understood by other friends. In line with the research of Nurhanifah et al. (2021), it is very difficult for

deaf students to understand language, especially language whose meaning is not yet known.

Peer tutoring can be done by at least 2 students or more. According to Febianti, (2014), that two or more students can do peer tutoring. There are 5 students in class X SMALB N Slawi, so they are only divided into 2 groups, each consisting of 2 students and 3 students. The main purpose of using the peer tutoring method is to train students' confidence in discussions because, so far, the difficulty of deaf students is in communicating with their teachers. Using the peer-to-peer tutor method will make it easier for students to discuss with each other. The peer tutor method can also lighten the teacher's task in explaining material to all students in the class. According to Septiana (2013) said in her research, students will feel comfortable asking about the material they don't understand without feeling embarrassed if they use the peer tutor method.

The implementation of learning with the peer tutor method has the following steps. (1) the teacher chooses a tutor who has the best report card grades in class or gets good test scores and can master the material, (2) the teacher divides students in the class into several groups according to the level of intelligence of each student. One group contains students with smart, moderate, and less abilities, (3) after the teacher explains the material, the tutor then provides guidance and helps other students in discussing questions and difficulties faced by other friends, (4) the teacher fills out an observation sheet during the learning process, (5) each student evaluates learning individually (Kusanti, 2022).

Being a peer tutor must meet several requirements. Among others, the tutor must be an outstanding student in class, be able to explain the subject matter well to other students, be friendly and easy to help, and have the creativity to help his friends (Arikunto, 1988). A tutor must have extensive knowledge, be diligent in finding material information and keep learning. A tutor can also be selected from students who are given material before the learning process takes place so that when the learning process takes place the student can act as a tutor for his friends.

The peer tutoring method has advantages and disadvantages in the learning process. The advantages of the peer tutor method include conveying information that is easier for friends to understand because it uses the same language, students can easily convey their difficulties to the tutor, and the learning process is more relaxed because they study with their friends. Students are more enthusiastic and interested in learning in class. Meanwhile, according to Arikunto (1988), the lack of the peer tutoring method is that students are not serious in the learning process, are shy and it is not easy to get a good tutor.

Based on the problems that often arise, especially in the learning of deaf students, research by applying the peer tutoring method is expected to provide benefits for deaf students. These benefits include that it is easier for deaf students to understand lessons conveyed by peers who act as tutors, deaf students are more motivated in learning, and deaf students are more confident in expressing opinions and conveying difficulties experienced in learning a subject matter.

METHODS

This research is qualitative research with a descriptive research method that aims to describe the application of the peer tutoring method to learning mathematics for deaf students. The main instrument is the researcher himself. Time and place at SMALB N Slawi. The research subjects were selected using a purposive technique in which the subjects were selected according to the specific characteristics under study. The unique feature is deaf students of the same age level. The subjects chosen were 5 students with special needs (deaf) who were the same age, 17 years, and class X SMA. Each student is divided into 2 groups of 2 students and 3 students. The selection of tutors is carried out as the first step of the peer tutoring method. Researchers made initial observations to determine deaf students who would become tutors. The tutor is selected based on semester 1 grades and students' daily tests. 2 students with more ability are tutors for each group. Implementation and observation or data collection were carried out in 3 meetings.

The next research stage is to plan actions to be carried out in the learning process by making lesson plans, observation sheets, and questions. The next stage is to take action by carrying out learning according to the peer tutor's learning steps that have been made in the form of lesson plans while making observations. At the end of the lesson, a test is carried out to get the learning results. The last stage is reflection, where at this stage, the findings obtained during the observation of the action are discussed. The data collection uses tests, observation, and documentation. Data analysis with data reduction, presentation, and conclusion, is a model from Miles and Huberman (Sugiyono, 2015).

RESULTS AND DISCUSSION

Based on the results of the research, the mathematics learning process for deaf students at SMALB N Slawi went smoothly even though there were several obstacles. The excellent interaction between students and other friends evidences this. At the first meeting, the researcher, as a teacher, chose tutors based on the student's highest end-of-

semester scores. Then, other students were divided into groups based on intelligence level, consisting of intelligent, medium to low students. Where 1 class has 5 deaf students divided into 2 study groups. One group consists of 2 students, and 1 group consists of 3 students. Then the teacher gives materials and worksheets to each group. The material provided is circle material. The group leader or the person in charge of being a tutor comes to the front of the class to be given a brief explanation by the teacher about the circle material and allowed to ask questions if there is an explanation from the teacher that is not understood. Other students who are in their group study the material with other friends in each group. The teacher conveys that for the next meeting, the tutor will explain the material and worksheets for each group.

The second meeting is in the learning process when the teacher finishes explaining the material and there are students who still don't understand the material, it's the tutor's job to explain again. This is due to the limitations of deaf students in terms of hearing, so it will be easier for the tutor to convey and explain it. Tutors help students who experience difficulties in class and after the learning process. Trianto (2013) states that the peer tutor learning method involves several students in discussing a subject matter.

Each tutor provides an explanation of both the material and worksheets to students in a group. The worksheets provided were worked on and discussed together with the help of the tutors for each group. During the learning process, the teacher goes around making observations. Observations made by the teacher in the form of student activity, tutor performance and implementation of the learning process. The learning process lasts 1 hour. During the learning process, there were various kinds of student behavior in the group, some were serious about listening to the tutor, and some were busy themselves not listening to the tutor's directions. But when the teacher approached to make observations, all students in the group seriously listened.

Giving group assignments also makes it easier for deaf students to discuss with other friends. Students can easily ask about the difficulties they face with friends who become tutors. The tutor explains or explains in their everyday sign language to make it easier for the tutor when explaining. It can also increase the confidence of deaf students in expressing their opinions or difficulties. In line with research conducted by Aini & Suryowati (2022), deaf students need to get help and repetition in explaining the subject matter. The same thing was also said by Husniati et al. (2020) in their research which stated that repeated explanations about the questions and material provided were really needed by deaf students.

Figure 1. Observation of Deaf Students' Activities

In Figure 1, the deaf student is working on a worksheet. While working on worksheets, deaf students experienced problems in understanding mathematical concepts. In understanding the mathematical concept of deaf children requires a detailed explanation. This is due to the limitations of deaf children in terms of language, so deaf students find it difficult to understand questions, especially math questions in the form of word problems. According to Khaerani (2019), in his research that children with special needs have difficulty understanding concepts and questions properly. Difficulties in understanding concepts when discussing are the task of the tutor to explain to group mates.

The 1-hour discussion activity was over, and then the teacher appointed a representative for each member to work on the problem and explain it to the other groups. When explaining in front of the class, on duty is a group member. Some students could explain well, but there was 1 student who did not understand the material, so the tutor could help to explain the material. Other groups can ask questions that are being worked on, and if there are difficulties the tutor will help explain again. The second meeting was closed with an evaluation given by the teacher and announcing the implementation of the test at the next meeting. At the third meeting, a test was held to test the extent to which the students' abilities had been applied after the peer tutoring method was applied.

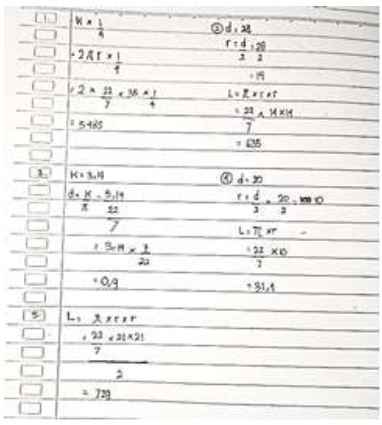

Figure 2. Answers of Student 1 (S1)

In Figure 2, the problem-solving from S1 shows quite good results, and one number shows an inaccurate application of the concept. S1 was also not careful in writing down known questions and was not careful in operating the questions so that there were several questions whose results were still wrong. In addition, S1 does not use units of radius, diameter, area or circumference for each problem that has been worked on.

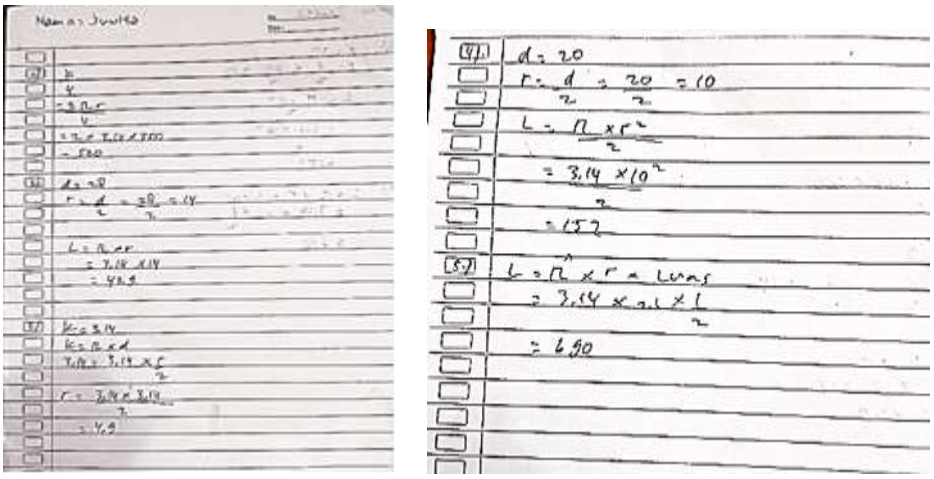

Figure 3. Answers of Student 2 (S2)

In Figure 3, the answers to questions from S2 show pretty good results; it can be seen that the concept used is not quite right. S2 was also not careful in writing down general questions and was not careful in operating the questions so that there were several questions whose results were still wrong. In addition, S2 does not use units of radius, diameter, area, or circumference for each problem that has been worked on.

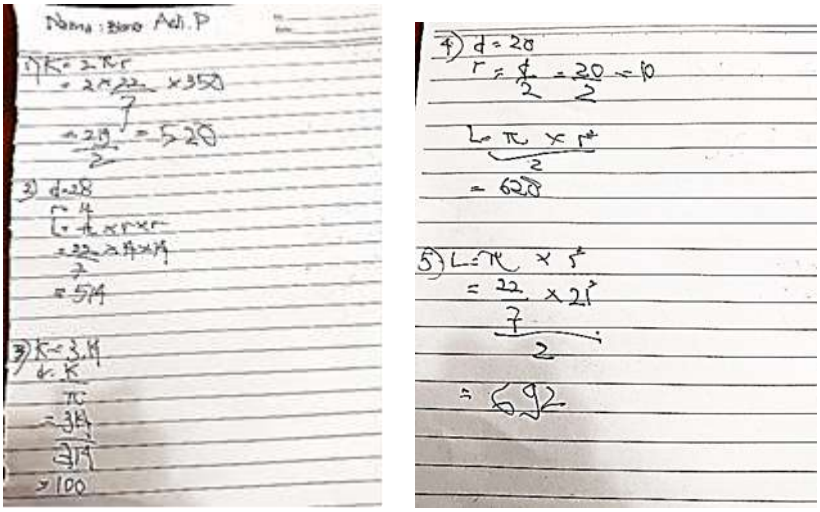

Figure 4. Answers of 3 S3 students

In Figure 4, the answers to questions from S3 show good results, it can be seen that the concept used is correct. However, S3 was not careful in operating the questions, so there were several questions whose results were still wrong. In addition, S3 does not use

units of radius, diameter, area or circumference for each problem that has been worked on. It can be seen that S3 already understands well about story problems in circle material.

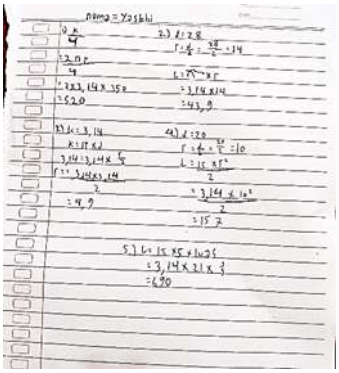

Figure 5. Answers of Student 4 (S4)

In Figure 5, the answers to questions from S4 show pretty good results; it can be seen that the concept used is not quite right. S4 was also not careful in writing down known questions and was not careful in operating the questions so that there were several questions whose results were still wrong. S4, when working on questions, lacks focus because S4 always looks at friends to ask questions. In addition, S4 does not use units of radius, diameter, area, or circumference for each problem that has been. It worked.

Figure 6. Answers of Student 5 (S5)

In Figure 6, the answers to questions from S5 show pretty good results; it can be seen that the concept used is correct even though there is 1 number that is not quite right in writing the formula. In addition, S5 was not careful in operating the questions so there were several questions whose results were still wrong. In addition, S3 does not use units of radius, diameter, area or circumference for each problem that has been worked on. It can be seen that S3 understands quite well about story problems in circle material.

From the test results of the five deaf students, it can be concluded that some students could apply the circle material concept well, although there were deaf students who were less thorough in applying the problem concept. This is as stated by Nurhanifah et al. (2021), that deaf students have difficulty understanding the questions, so they don't understand how to apply the concept and are confused about how to use the method according to the questions asked. Another weakness of deaf students is the lack of focus and thoroughness in operating the questions correctly. This makes the operation results of deaf students less precise as said by Hasmira (2016) that is working on problems, deaf students have difficulty focusing. In addition, according to Nurhanifah et al. (2021), deaf students have difficulty using appropriate principles when working on problems. The use of units of area and circumference of a circle is also often ignored by deaf students; besides that, they are more likely to want to solve the problem quickly. So that the results of the work of deaf students are less than optimal.

The test results showed that the average value obtained by deaf students was 69. Deaf students who achieved KKM scores (of 65) were 4 out of 5 deaf students who took part in the learning process using the peer tutor method. Thus, there are 80% of deaf students complete. The observation results showed that 80% of students responded well; students listened and asked each tutor in each group. 20% of students are sometimes busy doing their assignments because some can immediately understand the material and assignments given by the teacher. Observation for tutors there are still tutors who have not mastered the material very well because the tutor did not prepare the material properly the previous day. There are tutors who complain about the attitude of their members who don't want to listen to the tutor's directions, their members are busy working on their own problems

The application of the peer tutor method shows good learning outcomes. The results of this study are expected to be the basis for teachers in choosing appropriate learning methods, especially for deaf students. Using the peer tutor method, the delivery of material is easier for other students to understand because one classmate who becomes a tutor uses everyday sign language, which is easier for other friends to understand. Learning activities using the peer tutor method can influence student understanding so that good learning outcomes can be obtained. This was also conveyed by Sidiq et al. (2018), that appropriate learning activities during learning can affect students' understanding and learning outcomes.

There are obstacles faced by peer tutors, including the use of sign language which is sometimes different from other friends. Tutors can ask for help from other group tutors to help explain. The use of the tutor's writing is one of the last means for the tutor to convey material to other friends. Tutors experience problems when tutors do not master the material to be explained to students or friends. The tutor will ask students who don't understand to ask directly about the material to the teacher. Tutors also experience problems when there are friends who are passive or embarrassed to ask questions. The tutor will socialize or approach these students, so they want to ask about material that they don't understand. By cultivating the confidence of other students, students can be more confident in doing assignments and get better achievements. The same thing was conveyed by Meika & Sujana (2017) that in order to achieve good achievements, students need to have high self-confidence. By having self-confidence, students will always think positively and will achieve good achievements.

Based on the results of observations, there are several actions that can be taken by the teacher, including the teacher can help with difficulties by giving directions to tutors in dealing with these difficulties. The teacher gives motivation to students who are passive, so they want to work together with their group 1 friend. Motivation plays an important role in improving student achievement. this is in line with research conducted by Subekti et al. (2012) that in order to improve learning achievement, it is necessary to develop student learning motivation mentally and socially so that it will increase student learning achievement. The teacher gives rewards to compact groups for working together during the learning process.

CONCLUSION

The conclusion that can be drawn from the discussion above is that peer tutors have an important role in the learning process in class for deaf students in class X SMALB Negeri Slawi. This can be seen from the smoothness of the learning process. In addition, from the test results, the average score obtained by deaf students was 69, and there were 80% of deaf students had completed KKM. Observations showed that 80% of students responded well. By using the peer tutor method, the delivery of material is easier for other students to understand because the same sign language is owned by each deaf student making the delivery of material carried out by the tutor easier to understand by other students. Due to language limitations, deaf students must get attention and help understand

the material in school. So that peer tutoring is an appropriate learning method to overcome the limitations and difficulties of deaf students in class X SMALB Negeri Slawi.

Researchers suggest that deaf students who become tutors can help other friends in a group during the learning process or after the learning process. In addition, mathematics teachers should be able to work with tutors so that the implementation of learning in class runs smoothly without any obstacles. It is also hoped that all deaf students will receive the same information and knowledge as other students.

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