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LEARNING MATHEMATICS IN THE INCLUSIVE CLASSROOM: SLOW LEARNER STUDENTS'S DIALOGUE IN A DISCUSSION

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Abstrak

Keterlibatan sisiwa berkebutuhan khusus ditunjukkan oleh dialog di kelompok belajar dalam pembelajaran matematika di kelas inklusi. Oleh karena itu pembentukan kelompok harus dipertimbangkan guru untuk memunculkan dialog tersebut. Berdasarkan hasil observasi, hambatan yang terjadi dalam keterlibatan siswa berkebutuhan khusus dalam proses diskusi kelompok menurut responden adalah tidak semua anggota kelompok memahami siswa ABK, kecepatan siswa ABK dalam menyerap informasi yang lebih lambat, dan kurangnya komunikasi antara ABK dan teman non ABK. Artikel ini bertujuan untuk: 1) menggambarkan dialog yang terjadi antara siswa ABK *Slow Learner* dengan guru pada saat kegiatan awal dan akhir pembelajaran, serta dialog dengan teman sejawat dalam kelompok belajar di kegiatan inti; 2) mengetahui karakteristik kelompok belajar yang membantu siswa ABK *Slow Learner* memahami materi di kelas. Subyek penelitian adalah satu siswa ABK Slow Learner kelas VII SMPN 14 Banjarmasin. Temuan penelitian menunjukkan bahwa dialog verbal ditunjukkan oleh ABK dalam diskusi kelas maupun diskusi kelompok. Siswa ABK cenderung memperhatikan jawaban teman di kelompoknya dan mengulangi jawaban tersebut. Selain dialog dalam bentuk verbal siswa ABK menunjukkan gestur untuk menunjukkan keterlibatannya dalam diskusi. Dalam pembentukan kelompok, guru mempertimbangkan teman sejawat yang selama ini duduk dekat dengan ABK sebagai teman kelompok untuk ABK. Pemilihan gender dalam pembentukan kelompok juga menjadi pertimbangan guru. Kelompok belajar yang terdiri dari siswa laki-laki dan perempuan membuat ABK bisa berinteraksi lebih aktif.

Kata kunci: Pembelajaran matematika; kelas inklusif; lambat belajar; gender.

Abstract

The involvement of students with special needs is demonstrated by dialogue in study groups in mathematics learning in inclusive classes. Therefore, the teacher must consider forming groups to create this dialogue. Based on the results of observations, the obstacles that occur in the involvement of students with special needs in the group discussion process, according to respondents, are that not all group members understand ABK students, the speed of ABK students in absorbing information is slower, and the lack of communication between ABK and non-ABK friends. This article aims to: 1) describe the dialogue that occurs between ABK students Slow Learner with the teacher at the beginning and end of learning activities, as well as dialogue with colleagues in study groups in core activities; 2) know the characteristics of study groups that help ABK students Slow Learner understand the material in class. The research subject was a class VII ABK Slow Learner student at SMPN 14 Banjarmasin. Research findings show that ABK demonstrates verbal dialogue in class and group discussions. ABK students tend to pay attention to their friends' answers and repeat them. Apart from dialogue in verbal form, ABK students show gestures to show their involvement in the discussion. In forming groups, the teacher considers colleagues who have been sitting close to ABK as group friends for ABK. The choice of gender in group formation is also a consideration for the teacher. Study groups of male and female students allow ABK to interact more actively.

Keywords: *mathematics learning; inclusive classroom; slow learner; gender*

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INTRODUCTION

Children who are slow learners are children who experience general delays in cognitive and social functions; students show a pattern of slow development, and they appear to experience difficulties in most or even all subjects ((Díez-Palomar & Olivé, 2015); (Yuwono & Utomo, 2016))—research on the understanding and mathematical abilities of students with special needs, including *slow learner*s. Liu et al. (2019) and Saleh et al. (2017) stated that the low level of students with special needs in geometry material is caused by their relatively low memory power, lack of confidence in expressing their answers, and lack of focus on ongoing learning. The research conducted by Sukoriyanto & Aprilia (2024) aims to describe the written mathematical communication abilities of slow learner junior high school students in solving word problems related to the Pythagorean Theorem. Other research is to determine the communication skills of slow learner students and provide scaffolding to help dialogue occur.

Previous research examined the communication skills of slow-learner students in solving geometry questions or problems. There are not many studies that describe the dialogue of slow learner students when working in groups. Teachers chose the cooperative learning model to involve students with special needs in group discussions, hoping that peers can become peer tutors (Kazak et al., 2015).. Research results of Jannah et al. (2019) and Tran et al. (2020) show that apart from support from the teachers themselves, learning involving peers can help teachers by placing slow learners in pairs or groups, where there is at least one outstanding student who can help his friends. Alexander (2018) said that the dialogue that occurs must be able to understand the students who are having the dialogue. The use of peer tutoring occurs in group discussions, but the interactions and dialogue that occur are not explained in detail.

The explanation above shows the importance of involving dialogue in study groups in mathematics learning in inclusive classes. This research aims to describe the formation of study groups that can support dialogue between ABK students and teachers and peers in classes and study groups at SMP Negeri 14 Banjarmain and explain the dialogue that occurs, including interactions between peers and teachers in dialogue that help understand the material. To students with special needs, gestures of students with special needs when involved in discussions, and students who take the initiative in starting dialogue in discussions.

METHODS

This research is qualitative and case study-type. It was carried out at SMP Negeri 14 Banjarmasin class VII C. Of the three students with special needs in that class, one subject was taken, namely, students' slow learner, based on consideration of communication skills and dialogue that occurs during learning. Data was taken from two videos, each 50 minutes long, which showed mathematics learning activities in class.

The research instrument is a video observation sheet of mathematics learning in inclusion classes. Two validators, a special education lecturer and a mathematics education lecturer, validated the observation sheet instrument. Indicators on the dialogue observation sheet that occurred can be seen in Table 1.

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Table 1. Indicators for observing slow learner student dialogue in learning

No	Learning Activities	Observation Indicator
1	Early Learning	a. Dialogue that occurs when the teacher gives an apperception. b. Dialogue occurs during teacher and student questions and answers discussing previous material.
2	Learning Core	a. Dialogue is when the subject completes the LKPD in the group. b. Dialogue is when the subject is discussed with group members. c. Dialogue when subjects are involved in class discussions.
3	End of Learning	a. Dialogue occurs when the subject is involved in the question-and-answer process with the teacher and students to conclude the learning.

Researchers observed mathematics learning involving inclusive students. More indepth observations were carried out on learning videos obtained from recordings when mathematics teachers taught in inclusion classes. The first video learning material is about the area and perimeter of a rhombus, and the second video is about the area and circumference of a kite.

Data analysis procedures include data reduction, data presentation, and conclusion. Data reduction was collected by collecting information regarding dialogue in mathematics learning in inclusion classes from analysis of learning video observations. Focus observations on dialogue involving ABK in class and group discussions. Data presentation is carried out by presenting information as excerpts from observed dialogue. Next, conclusions are drawn by providing conclusions from the research results based on the research objectives.

RESULTS AND DISCUSSION

The teacher formed eight study groups consisting of four to five students in one group. ABK students *Slow Learners* in class VII C are placed in groups of three, all of which are female, with the seating position in the front group near the blackboard. The study group is formed by choosing study friends close to the subject so that communication occurs during the learning process.

The teacher provides material reinforcement in the form of questions and answers using visual aids to remind the formula for the area and perimeter of a triangle. The teacher uses teaching aids at the beginning of the lesson to explore students' initial abilities through questions and answers. The subject focuses on the teacher, and the students feel interested in what the teacher says. This shows that media use can attract students' interest, especially in subjects studying material. For special needs students with autism, apart from making perceptions, they link schemas by repeating previous information by observing various images or objects that can represent the objects being observed ((Mustafa et al., 2016); (Sovia & Herman, 2020)).

This can attract the subject's attention so that the female student always tries to answer the teacher's

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questions even though not all the answers are correct. Teacher intervention using open questions is better than controlling group learning activities with peers. Aziz et al. (2016) and Carter et al. (2017) hows that peer intervention strengthens the social participation of students with special needs in regular classes with other students. Slow learner students have pretty good communication skills from a linguistic and metacognitive perspective, as explained by research subjects (Santoso et al., 2021).

Likewise, in this research, the subjects could express their thoughts in dialogue. The following is an excerpt from the subject's dialogue on three learning activities observed from two learning videos.

First learning video.

1. Initial Learning Activities

At the beginning of the lesson, the teacher greets the students and then conveys the learning objectives for that day, namely, finding the formula for the circumference and area of a rhombus using teaching aids.

Excerpt 1. Dialogue involving student C during apperception activities.

Teacher	:	Do you still remember the formula for finding the area of a triangle? (while writing on the board).
Student M	:	Base times height divided by 2...(sitting position M to the subject's left).
Teacher	:	(Repeating the same question) What is the formula for the area of a triangle?
Student M	:	(repeats student M's answer, answers confidently while shouting) base times height divided by two...

The observation results show that the subject actively dialogues with his colleagues, especially his group friends. When the teacher held a question-and-answer session to explore the prerequisite material, the subject seemed enthusiastic to answer the teacher's question even though the answer was correct because it was the result of imitating the answer of his friend next to him. Several times, the subject was seen listening to the answer from the friend next to him and then copying the answer out loud.

Excerpt 2.

Most students answered simultaneously when the subject answered, but the subject's voice could be heard clearly. After that, the teacher wrote the formula for the area of a triangle on the writing pad. The teacher continued the question-and-answer with the students while holding the triangle in his left hand.

Teacher	:	So, now, in this isosceles triangle, where is the height?

As did the subjects, Some children indicated the triangle's height with hand gestures.

Subject	:	Height... (showing with hand movements that the height of an isosceles triangle is the two hypotenuse sides).
Student M	:	Height of the triangle (make movements from top to bottom).
Teacher	:	What is height, kids? The height is the line perpendicular to the base (while showing the

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movement of the triangle being carried).

The teacher continues the dialogue by showing a prop as a rhombus.

Teacher : What is the perimeter of this rhombus if the side length is 5?
Subject : (While glancing at student M, repeats student M's answer loudly) Five times four...
Teacher : Now, sir, holding scissors and a rhombus made of cardboard, let us experiment.
Subject : Yess (screaming happily while smiling at female student S, and female student S also smiles)
Teacher : How many triangles are made when this rhombus is cut (demonstrating the movement of cutting the rhombus precisely in the middle)?
Subject : (In unison with other students, shouting) four...(with fingers showing four). Meanwhile, his group of friends answered two. Realizing his mistake, the subject smiled while pushing student S's body (student S laughed, too).

The subject not only imitated his friend's answer but also tried to think of his own answer even though the answer was wrong. Subjects who always answered the teacher's questions by shouting realized that the answer they gave was wrong. This can be seen in how the subject immediately laughs and covers his mouth while the friend beside him laughs. Once again, there was support from his group of friends.

2. Dialogue in Group Discussion Activities

The subject's involvement in dialogue was not visible during group discussions. Subjects were not involved by their peers in thinking about completing the teacher's assignments. However, active subjects always tried to involve themselves by following what their friends in their group were doing and just watching their group friends work.

During the group discussion, the subject's three group friends cut out, pasted, and wrote the rhombus formula on the small board provided but did not give the subjects the opportunity to join in. In this activity, the subject and his three group friends did not show much dialogue.

3. Dialogue at the Closing Activity

Before giving students an evaluation, the teacher asked each one to summarize what they had learned that day. However, no one raised their hand, so the teacher allowed the students to conclude by reading the results written on their respective groups' boards.

Excerpt 3

Teacher : Who wants to convey? Raise your hand...
Subject : I am, Sir…
Teacher : Yes, please, from group three...

The subject came forward with a smile and started reading the results board of another group (his group friends immediately responded by pointing to their group's results board).

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Subject	:	Ehh..so in conclusion, we learned rhombuses..which are divided into two isosceles triangles.. (stop)
Teacher	:	Yes, then the formula for circumference...
Subject	:	(Looking for the answer on the board) The perimeter of a rhombus is four s (stop again)
Teacher	:	Or four times…
Subject	:	(confused while looking at his group friends) then answered four times.
Teacher	:	Next, the formula for the area of a rhombus is...
Subject	:	(Reading the group results board again) The formula for the area of a rhombus is half times the diagonal of one times the diagonal of two.
Student M	:	(Whispering to the subject) or diagonal one times diagonal two divided by two.
Subject	:	(Repeating what student M said while smiling) or diagonal one times diagonal two divided by two.
Teacher	:	Yes, that is right.

After the subject read the conclusion, all the students clapped, and the subject clapped happily in front of the class. The subject's involvement in dialogue is visible in study groups and during class discussions. At the end of the lesson, the subject dared to come forward when the teacher asked one of the students to provide a conclusion on what was obtained that day. With the help of the teacher and friends, the subject could read the formula for the area and perimeter of a rhombus correctly. Support from classmates was also visible when everyone applauded when the subject succeeded in providing a conclusion.

Second learning video

Based on observations at the previous meeting, the teacher changed the study group members. Subjects were in groups of 8, with group members consisting of two female and two male students seated in the back position near the wall. The teacher considered placing the subject with friends who were different from the previous group because, during the first meeting during the group discussion, the subject was not involved (ignored) in completing the group assignment.

Teachers should consider placing ABK students with group members who can support dialogue when arranging study groups in class. Teachers can consider friends who can communicate with ABK students and are responsible in their groups. As can be seen from the subject, he is enthusiastic about taking part in learning because of the support from his group of friends. Teachers implement ABK with colleagues in pairs or groups so that there is interaction and assistance from peers for ABK ((Carter et al., 2017); (Tran et al., 2020)).

The observations at the first meeting showed that the subjects were more involved in dialogue, especially with their group friends. Subjects also dare to come forward to their classmates to summarize what they learned that day. Observations at the second meeting showed that the subjects were actively involved in group discussions compared to the previous meeting.

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The assignment the teacher gave was a worksheet to get the formula for the area and circumference of a rhombus at the first meeting and the formula for the area and circumference of a kite at the second meeting. When the teacher explained that he would distribute tools and materials like scissors and cardboard to each group, the subjects were seen clapping happily, as did students A and B. According to research results (Bakker et al., 2015), using materials that can be held in learning Geometry is very suitable for students with special needs, allowing all students to find a perspective approach to the problem given.

Subjects who were not previously involved in group discussion activities at the previous meeting were actively involved in working on questions from the teacher during this second meeting. When the group came forward to answer the questions, the subjects were confident in writing different results from the other groups. This problem is to find the area of a kite if it is known that the lengths of each diagonal are 14 cm and 30 cm. Seeing that the answers of the subject groups were different, the teacher asked the group representatives to explain in the future.

When the teacher asked group representatives to write their respective answers on the blackboard, the subjects were not embarrassed to write their group's answers even though they differed from other groups' answers. Even though some friends in the class laughed at the answer, the subject confidently came to the front of the class to explain the different answers, accompanied by his group of friends. With the teacher's and his friends' guidance, the subject realized that his group was wrong in calculating the area of the kite. Dialogic determines how students learn through understanding ((Alexander, 2019); (Díez-Palomar & Olivé, 2015)), but two other factors determine the success of learning, namely the role of the teacher in dialogue and dialogical interaction, which facilitates the formation of an "argumentation cycle."

Excerpt 4

Teacher	:	Let us bring group 8's answers to the front and explain why the result is 120 cm.
Subject	:	Read the results of the group's work kite area $\frac{1}{2} \times 14 \times 30 = 140$
Teacher	:	Come on, where is the problem?
Subject	:	(Smiling) misunderstood...

When the subject was at the front to explain his group's answer, several of his friends pointed out that the answer was wrong so that the subject understood where his mistake was when the teacher asked.

As in the previous meeting, the subject volunteered to read the conclusion of that day's lesson in front of the class with the guidance of his teacher.

Excerpt 5.

Teacher	:	What conclusions did you learn today?

(Students in the class are busy appointing other friends to come forward to read the conclusion).

Teacher	:	Come on, those who want to come forward, sir, give additional points.
Subject	:	I am sir (while coming to the front of the

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class). What we learn is the kite's circumference (stop).

Teacher : The formula...(while showing the formula for the area and circum-ference of a kite written on the blackboard.

Subject : (While smiling) Read the formula for the area and circumference of a kite...

The advantage of this research is that it observes the subject's dialogue and gestures in-depth. However, the disadvantage is that it does not conduct interviews with the subject to follow up on the results of these observations to get a complete picture. Apart from dialogue in verbal form, subjects often use gestures to support communication in class, such as using their hands to depict in the air the height of a triangle, tilting their heads as if listening to their friend answering the teacher's question and leaning forward when they want to listen to the teacher's explanation. Even when the subject feels happy when he can answer the teacher's question correctly, he claps his hands to express his expression.

This is in line with research (Elvierayani et al., 2023; Sovia & Herman, 2020), which found that slow learner student gestures include iconic gestures: using fingers and toes in counting and representational gestures: students cannot answer questions for clear reasons, students are less able to explain their ideas but do not feel embarrassed to ask. Mustafa (2016) found that autistic students' gestures when identifying problems were seen in facial expressions focused on the object being observed, followed by irregular hand movements and an unfocused view, indicating that students had difficulty processing information about the object being observed.

CONCLUSION AND SUGGESTION

Teachers carry out the placement of study groups by considering colleagues sitting close to ABK as group friends for ABK at the first meeting. However, the observations showed that ABK students were not active in group discussions because their group friends were not involved in completing assignments. Therefore, at the second meeting, the teacher placed ABK with different colleagues and showed ABK's activeness in class and group discussions. Group members were taken from friends who were not close friends of the ABK in their daily lives and whose seats were far from the ABK. Apart from that, the choice of gender in group formation is also a consideration for the teacher. Study groups of male and female students allow ABK to interact more actively. This is because ABK will interact more with the only female friend in their group. In contrast to the first meeting group, whose members were all women, ABK students tend to be ignored.

The dialogue seen in observations, apart from the verbal form of ABK students, showed gestures to show their involvement in the discussion. The gestures that appear are iconic and representative gestures. ABK students could follow the teacher's explanation at the beginning of the lesson because all students answered questions from the teacher simultaneously. Apart from that, teachers use teaching aids to help students explore the prerequisite material that students already have, attracting the attention of ABK students.

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This research was conducted on one subject: slow learner students, and is still at the descriptive level. Further research is necessary to examine more diverse subjects, genders and groups, and other types of students with special needs.

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