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Instructional communication as a catalyst for improving student motivation and engagement

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ABSTRACT
Background: This study examines the instructional communication of mathematics teachers at SMPIT Darul Muqorrobin, considering the students' low mathematics scores that contrast with their notable non-academic achievements. The purpose of this research is to analyze the instructional communication strategies employed by mathematics teachers to enhance the learning interest of seventh and eighth-grade students. The study is grounded in the theory of instructional communication, which emphasizes the teaching methods used by teachers in conveying knowledge to students. **Methods**: The research employed a qualitative descriptive method, with data collected through interviews, observations, and documentation. **Findings:** There are three identified aspects of the teacher's instructional communication strategies: (1) effective teacher communication skills contribute to improved quality of classroom learning, (2) teachers must be adept at overcoming learning barriers, particularly students' weak mental attitudes, in order to foster motivation in learning mathematics, and (3) support from the school plays a crucial role in the learning process, enabling teachers to perform their duties effectively. **Conclusion**: The teacher's communication capital and teaching skills are essential for ensuring effective instructional communication. **Novelty/Originality of this article:** Instructional communication is closely related to educational reflection, providing teachers with valuable input for evaluating the quality, skills, and learning barriers within the classroom.

KEYWORDS: instructional communication strategy; math teacher; students .

1. Introduction

Mathematics remains one of the most challenging subjects for junior high school students, as revealed in the 2022 PISA (Programme for International Student Assessment) report on the quality of Indonesian education. PISA is an international study that evaluates the quality of education systems by measuring essential learning outcomes—namely reading, mathematics, and science literacy—among 15-year-old students, randomly selected across participating countries (Aditomo & Köhler, 2020; Güre et al., 2020; Pritchett & Viarengo, 2022). The primary objective of PISA is to monitor educational quality over time and to enable international comparisons. These three dimensions of quality provide insights into how students process information, apply critical thinking, solve problems, and engage in reasoning. According to the 2022 PISA report published by the Organisation for Economic Co-operation and Development (OECD), the quality of education in Indonesia has shown a continued decline (Wang et al., 2023; Widi, 2023).

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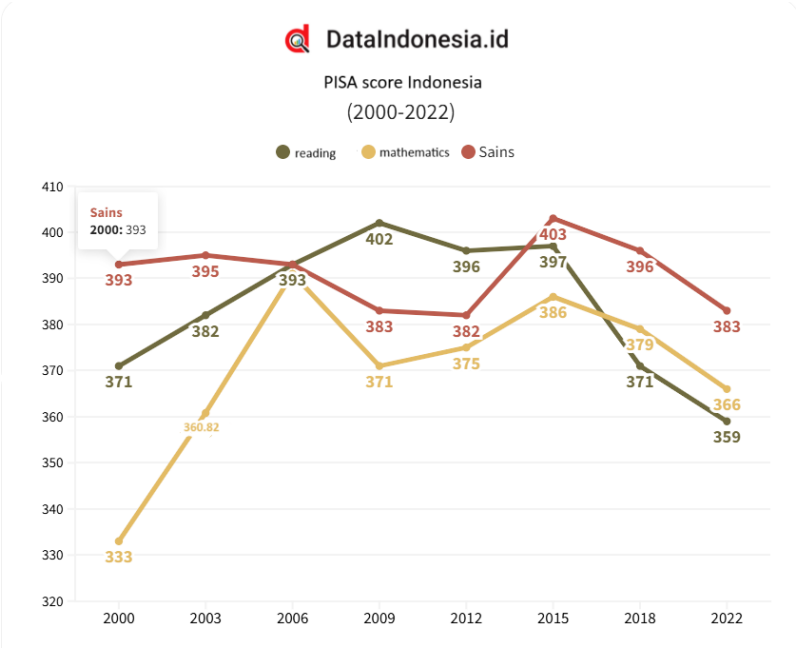

Fig. 1. Indonesia's PISA score
(Widi, 2023)

Figure 1 illustrates the average performance across three key competencies: literacy, numeracy, and science. Over the past 15 years, mathematics has consistently received the lowest scores. Although there was a slight improvement in mathematics performance from 2018 to 2020—placing it as the second lowest after literacy—in 2000, the average score in mathematics was the lowest, recorded at 333. In 2006, mathematics scores became comparable with literacy and science, but that year also saw a 22-point decline compared to three years prior (Widi, 2023).

The low performance in mathematics can be attributed to several learning barriers (Almanthari et al., 2020; Kayan-Fadlelmula et al., 2022). One major factor is that mathematics requires diligence in calculation (Arrial et al., 2024; Chinn, 2020; Dinapoli, 2023; Jiang et al., 2021). The subject involves memorization and the application of various concepts, which demand patience and persistence to understand. Additionally, poor performance in mathematics is also due to students' inability to comprehend the questions. Mathematics is often perceived as boring, abstract, and irrelevant to real life. However, this perception is misguided, as mathematics underpins many aspects of everyday life (Utami & Gischa, 2021). The level of mathematical understanding among junior high school students in Indonesia remains low (Kleden et al., 2021; Rahmawati & Usodo, 2021). This finding is supported by research showing that students' mathematical communication skills are still inadequate, as evidenced by their ability to meet only basic indicators such as explaining a solution using their own words based on visual representations (Rini et al., 2020). Students in Grades VII and VIII face different levels of learning with increasingly complex challenges. Each grade level also presents specific student characteristics. Therefore, it is important for mathematics teachers to understand the individual characteristics of their students. This allows teachers to identify which students require special attention during the learning process.

SMPIT (*Sekolah Menengah Pertama Islam Terpadu*/Integrated Islamic Junior High School) is an Islamic junior high school that emphasizes both formal academic education and Islamic religious studies. This integrated approach enables students to gain a more comprehensive religious education, aimed at improving both their academic achievement and moral values. SMPIT Darul Muqorrobin is one such Islamic integrated school located in Cileungsi, Bogor Regency. The school develops its curriculum by integrating the national junior high school curriculum with a pesantren-style (Islamic boarding school) education. With its vision and mission to foster a "pesantren-like" atmosphere, the school offers not

only general academic subjects but also intensive religious studies through classical Islamic texts. These include *Safinatun Najah* (for deepening knowledge of Islamic jurisprudence), *Hidayatul Mustafid* (for advanced Quranic recitation rules), and *Tijan Ad-Durari* (for theology and ethics). The school currently has a total of 65 students. SMPIT Darul Muqorrobin has achieved numerous accomplishments in religious education. Notably, it won first place in the district-level Pildacil competition at O2SN and FL2SN during the 2022–2023 academic year, first place in the Jabodetabek-level *Musabaqah Tilawatil Qur'an*/Quran Recitation Competition (MTQ) competition, and second place in the Jabodetabek-level calligraphy competition.

From the preliminary research, the researcher found a significant discrepancy when examining the academic achievements of these students. Despite excelling in non-academic activities such as preaching, arts, and languages, these achievements do not align with their academic performance. This is evident from the data of the Odd Semester Final Assessment/*Penilaian Akhir Sekolah* (PAS) for the 2022-2023 academic year, where the average mathematics exam score was 69, creating a gap that requires attention. Meanwhile, the Minimum Completion Criteria/ *Kriteria Ketuntasan Minimal* (KKM) for mathematics in Grade VII is 75.

It is important to recognize that achievements in various aspects of school life are highly valued. However, special attention must also be given to academic performance, considering the importance of a strong knowledge foundation for students' educational development. Further evaluation of the factors influencing mathematics exam results can provide valuable insights for designing more effective approaches, thereby providing optimal support for the students' academic development. Although the average mathematics score was 69 in the previous semester, there was a slight decline in the Even Semester Final Assessment for 2022-2023, with the average score dropping to 68. This average mathematics score still falls short of the KKM.

This fact highlights the need for further evaluation of students' academic performance in critical subjects such as mathematics. By understanding the changes in scores, the school and students can work together to identify areas that require further attention and design appropriate improvement strategies. Moreover, additional support and innovative learning approaches can be implemented to help students improve their academic achievements, thereby creating an optimal balance between non-academic and academic success. The school is where students acquire knowledge. The teaching and learning process involves the transfer of knowledge from the teacher to the students. In conducting educational activities, teachers need to use effective communication to convey information regarding the lesson to students.

Communication serves as a crucial bridge between the teacher and the students during the teaching and learning process. Therefore, the role of teacher communication has a significant impact on the smooth implementation of classroom learning. A failure to communicate effectively can become a serious barrier that hinders the effectiveness of the educational process. Communication plays a vital role in daily life, especially in the educational context. Communication is the process of conveying information and understanding from one individual, such as a teacher, to others, such as students. The message or content to be conveyed generally consists of instructional materials or lesson content aligned with the curriculum. The source of the message can come from the teacher, students, or others, while media in education functions as a channel, and the recipient of the message is the students (Sabri, 2005).

In the context of education, communication is referred to as instructional communication. Instructional communication can be described as the process of teaching, learning, and providing instruction. Teaching refers to the effort to transfer some of the teacher's knowledge to students. In this context, the teacher's role as an active communicator is predominant. Meanwhile, the lesson emphasizes the subject matter or educational content that is communicated or taught by the teacher to the students (Pawit, 2010). Instructional communication functions to influence students in the learning process.

This influence results in changes in students' behavior and learning skills. The instructional process occurs when someone assists others in changing their behavior (Safitri, 2020).

The issue arising in mathematics teaching at school is the ineffective implementation of instructional communication strategies, which have not fully emphasized analytical thinking and logic skills. Instead, there is more focus on memorizing formulas, where a teacher continuously provides theory and practice. According to an interview with E.N, , a mathematics teacher for Grade VIII at SMPIT Darul Muqorrobin, she stated that students only memorize mathematical formulas but lack a solid grasp of the underlying concepts. As a result, students struggle with problem-solving skills and exhibit a decline in learning motivation. E.N, explained that while students can answer multiple-choice questions, they are unable to provide complete solutions for open-ended test questions.

Instructional communication strategies are crucial for supporting mathematics learning at the junior high school level. As part of the educational role, instructional communication is responsible for managing the communication process that is specifically designed to provide added value to the intended audience. At the very least, the goal of instructional communication is to achieve changes in understanding in aspects such as cognitive, affective, conative, or psychomotor domains within the target group in the context of instructional communication (Pawit, 2010).

Based on the background above, this study aims to explore the instructional communication strategies employed by mathematics teachers at SMPIT Darul Muqorrobin. The author analyzes the student-centered instructional communication methods used by mathematics teachers, which encourage social interaction among students. The instructional communication methods outlined by Ruthven & Järvelä (2009) include, group discussions, where the teacher can organize group discussions in which students collaborate to solve mathematical problems. The teacher can pose questions or problems that require critical thinking and collaboration among students. During the discussion, the teacher acts as a facilitator, ensuring that each student is actively involved and gains a deep understanding of the concepts. Second, collaborative projects, where the teacher assigns a mathematics project that involves group work. Students can collaborate to complete the project, which may involve mathematical modeling, data analysis, or problem-solving. Through this project, students can learn from practical experience and interact with their classmates. Third, student presentations, where the teacher provides opportunities for students to present their solutions or problem-solving methods in front of the class. This not only helps students reinforce their own understanding but also allows other students to learn from these presentations. The teacher can offer feedback and facilitate discussions following the presentations. Fourth, the use of technology, where the teacher utilizes technology such as interactive mathematics software or smartphone applications to facilitate communication and collaboration in mathematics learning. For example, students can use apps to share ideas, solve problems together, or engage in online discussions. These instructional communication methods aim to create an active, collaborative, and student-centered learning environment. By applying a social constructivist approach, mathematics teachers can help students develop a better understanding of mathematical concepts and improve their communication skills.

2. Methods

This study employs a descriptive qualitative research approach. The unit of analysis in this research is the instructional communication strategy used by the mathematics teacher at SMPIT Darul Muqorrobin. The study involves one key informant, Qodarsyach, the chairman of the SMPIT Darul Muqorrobin foundation. As a key informant, Qodarsyach is expected to provide in-depth and comprehensive insights into various aspects of school policies and the teaching strategies implemented at SMPIT Darul Muqorrobin.

The research involves five informants with different perspectives. The first informant is E.N., a Grade VII mathematics teacher. The second informant is D.R., a Grade VIII mathematics teacher. The third informant is Agriel Bima Aditya (A.B.A), a Grade VII student

with average mathematics scores. The fourth informant is P.P.P., a Grade VIII student with average mathematics scores. The fifth informant is N.I.S., a Grade VIII student with the second-lowest mathematics score. These five informants provide direct perspectives based on their learning experiences in class, enabling a comprehensive understanding of the factors affecting mathematics scores.

3. Results and Discussion

3.1. Instructional communication methods of mathematics teachers at smpit darul muqorrobin

3.1.1. Group discussions

The group discussion method is part of the communication strategy implemented by mathematics teachers at SMPIT Darul Muqorrobin, a method that encourages students to collaborate in solving problems together in the classroom. In this strategy, the teacher can design questions or tasks that require critical thinking and cooperation among students. During the discussion, the teacher acts as a facilitator to ensure that each student participates actively and gains a deep understanding of the material being studied.

This method is designed by the teacher with the goal of achieving effective learning outcomes for both students and teachers. Through group discussions, students can exchange ideas, assist one another in understanding mathematical concepts being taught, and develop communication and collaboration skills.

Based on the researcher's interview with E.N, the seventh-grade mathematics teacher and key informant, it was stated that group discussion is an effective method for both students and teachers. E.N, explained that group discussions help optimize the use of time during mathematics lessons. In this method, students can collaborate with their groupmates, allowing those who have a stronger understanding of the material to assist their peers who are struggling to grasp the content. According to E.N, the group discussion method not only accelerates students' understanding but also encourages them to socialize with their classmates and creates a more interactive and participative learning environment between students and teachers.

Fig. 2. Grade VIII students are having a group discussion

Figure 2 above illustrates students engaged in group discussions during classroom learning activities. In this activity, the class is divided into three to four groups, each consisting of four to five students. The students are seen collaborating to answer the questions provided by the teacher. Within each group, students are expected to develop a deep understanding and cooperate to find solutions.

As D.R, the eighth-grade mathematics teacher and one of the informants, stated, group discussion is highly effective for students. She explained that discussions not only enhance students' understanding of the lessons but also incorporate broader topics beyond the curriculum. Interactions and communication among students enrich their overall learning experiences. She also emphasized the importance of maintaining focus on relevant topics, acknowledging that some noise generated during discussions is considered normal. However, if students begin to drift into unrelated topics, she promptly reminds them to refocus their attention on the lesson material.

Similarly, from the perspective of seventh-grade student A.B.A, he expressed that learning through discussions and interactions with his peers made him feel freer and more comfortable speaking in class. Group discussions provided him with opportunities to exchange ideas and understandings with his classmates, directly contributing to a better grasp of the material. This interaction also helped him become more engaged and active in the learning process.

A.B.A also noted that the assistance from his classmates was highly beneficial in understanding difficult concepts. When he discussed and received help from his peers, topics that initially seemed confusing became clearer and easier to comprehend. This demonstrates that collaborative learning not only improves material understanding but also provides emotional support. The support from his peers made him feel less isolated in facing the challenges assigned by the teacher.

According to E.N, in the group discussion method, students who are able to answer and present solutions to their classmates demonstrate two key abilities. First, they possess strong communication skills, as reflected in how clearly and systematically they convey their ideas, as well as their ability to capture the attention and understanding of their peers. Effective communication skills also include the ability to answer questions and respond to feedback confidently. Second, successful student presenters also exhibit a deep understanding of the subject matter. This involves their ability to analyze, interpret, and connect learned concepts with broader contexts.

There is, however, a slight difference in perspective regarding students' ability to answer questions in class using the group discussion strategy. According to D.R, the effectiveness of group discussions heavily depends on students' level of attention and focus. She observed that students who excel at answering questions are usually those who stay fully engaged during discussions. Concentration and active participation are key to achieving deep understanding and the ability to answer questions accurately.

She also added that if no students are able to answer a question, it indicates that they have not fully understood the material. In such cases, the teacher would revisit and re-explain the topic to ensure comprehensive understanding.

Group discussions, however, are not without challenges. As experienced by A.B.A, some problems discussed in groups tend to feel more difficult than when tackled individually. This could stem from differences in opinions, thinking styles, or problem-solving approaches among group members, which can slow down the solution process.

A slightly different challenge was shared by P.P.P, an eighth-grade student, who pointed out that group discussions often encounter obstacles when some members are lazy or reluctant to participate. P.P.P usually reminds his teammates not to be lazy and encourages them to keep working together. He motivates his group members to ask questions and engage in discussions when they face difficulties, emphasizing that the task must be completed collectively. His efforts to keep the group's spirit alive highlight his sense of responsibility and concern for the group's overall success.

Student participation and contribution play a critical role in the success of group discussions. As N.I.S, another eighth-grade student, explained, one major challenge in group discussions is the presence of group members who are unwilling to cooperate. Such behavior can slow down the problem-solving process. However, N.I.S found a solution by asking his participating groupmates for help whenever he encountered difficulties. He realized that seeking help from peers offered essential support and helped him overcome challenges.

Additional information was gathered through interviews with the key informant, Qodarsyach, the chairman of the SMPIT Darul Muqorrobin Foundation. He explained that schools should guide teachers to provide practical and relevant learning materials linked to real-life contexts. The goal is for students not only to understand theoretical concepts but also to apply them in their daily lives. By ensuring that learning is concrete and closely connected to students' experiences and needs, this approach is expected to enhance students' understanding and engagement in the learning process.

Moreover, he emphasized the importance of school facilities in supporting group discussions. Schools contribute by developing an assessment system that values collaboration and communication between students and teachers. By creating evaluation methods that recognize individual contributions in group work, schools encourage students to actively participate and collaborate. Assessments focusing on teamwork and communication also help nurture students' social and interpersonal skills, which are crucial for daily life and future success.

3.1.2. Collaborative projects

The collaborative project method is one part of the teacher's communication strategy in the teaching and learning process. This method is applied by the mathematics teacher at SMPIT Darul Muqorrobin. In a collaborative project, the teacher instructs students to form groups and complete a tangible project. By assigning collaborative projects, teachers can help students develop teamwork skills and enhance communication with their peers.

Fig. 3. Grade VII students are doing a collaborative project

Based on Figure 3 above, seventh-grade students are shown engaging in a collaborative project during a mathematics lesson in the classroom. The students are seen cooperating and distributing tasks according to their individual abilities. In this project, students are required to work together and complement each other to achieve the desired objectives. This method is designed by the teacher with the aim of fostering practical learning and encouraging interaction among classmates. Through collaborative projects, students can solve problems from different perspectives, distribute tasks based on their individual levels of understanding, and develop creativity as well as effective communication within the group.

The collaborative project strategy has shown several positive impacts, as experienced by both students and teachers. As expressed by E.N, the seventh-grade mathematics teacher, the application of collaborative project methods in mathematics learning has proven effective in influencing students' achievement, particularly in terms of creativity. When students are assigned projects, they tend to demonstrate their creativity by expressing innovative and creative ideas. For example, in projects involving three-dimensional shapes, students not only focused on basic forms but also enhanced their projects using more attractive colors.

D.R, the eighth-grade mathematics teacher, similarly stated that the collaborative project method is highly effective in influencing students' achievement. According to D.R, when students are given project-based assignments, they become more creative in combining various ideas. Collaborative projects allow students to integrate diverse perspectives into a unified, innovative output. Besides enhancing creativity, she noted that collaborative projects also help students develop critical thinking and problem-solving skills. Students learn to discuss ideas, evaluate different viewpoints, and work collaboratively to achieve shared goals.

The positive effects of the collaborative project strategy were also experienced by A.B.A. He mentioned that the collaborative project approach allowed him to interact and discuss with his classmates. He found that working in groups facilitated his understanding of mathematical concepts. Discussions and collaboration within the group enabled the exchange of ideas and explanations that were sometimes easier to understand than those given by the teacher alone. In other words, learning within a supportive group environment enabled him to ask questions, discuss difficulties, and discover new ways to comprehend the material, thereby enhancing his understanding and application of mathematical concepts.

P.P.P also shared a similar sentiment, stating that collaborative projects helped him in understanding concepts. However, he expressed slight discomfort with the method, feeling burdened by the need to produce a tangible project. He preferred conventional board-based learning over group work and hands-on projects. For him, traditional learning on the board seemed simpler and less troublesome compared to the extensive preparation and cooperation required in group activities. Meanwhile, N.I.S observed that the positive impact of the collaborative project strategy included the enhancement of creativity and a deeper understanding through tangible, hands-on learning. He also found that this activity not only supported his academic understanding but also enriched his creativity and collaboration skills.

According to Qodarsyach, who ensures the consistent and effective implementation of the collaborative project strategy across all classes, this approach supports the learning objectives set by the teachers. He emphasized that the learning process should incorporate aspects such as clear objectives, creativity, and innovation. He explained that subject teachers are better equipped to design effective learning schedules for their students. The school administration only advises teachers to arrange their schedules in a way that allows sufficient time for collaborative activities. These activities are expected to produce meaningful projects and involve the formation of balanced student groups based on their skills within the class. Furthermore, he added that the primary responsibility for project planning typically lies with the principal. As the head of the foundation, his role is to direct the principal to advise teachers to carefully plan their learning projects. These projects should have practical relevance and be applicable to everyday life.

The goal is for students to see and experience the practical value of the knowledge they acquire in school. Thus, learning becomes more meaningful and applicable, helping students understand how the knowledge they gain can be used in real-life situations. The foundation head expects teachers to design projects that are not only theoretical but also provide practical benefits to the students.

3.1.3. Student presentations

The student presentation method is part of the strategy implemented by mathematics teachers at SMPIT Darul Muqorrobin. In applying the student presentation method, teachers provide opportunities for students to present their solutions or problem-solving processes in front of the class, thereby facilitating the development of students' effective communication skills.

Figure 4 shows students presenting the results of the problems assigned by the teacher during a mathematics lesson in the classroom. A student is seen presenting the group's solution together with their teammates. Students acting as communicators need to possess strong communication skills to ensure that the message conveyed is understood by other

students, who serve as the audience. These skills are essential to guarantee that information is delivered clearly and comprehended effectively by all members of the class. This process not only helps students deepen their own understanding but also provides opportunities for their peers to learn from the presentations. Conducting such presentations can increase students' interest in mathematics lessons.

Fig. 4. Grade VII students are making a presentation in front of the class

According to E.N, allowing students to conduct presentations can enhance their interest in learning mathematics. The presentation method is particularly favored by students who have strong calculation skills, as they feel more confident and motivated to demonstrate their abilities in front of their classmates. On the other hand, presentations can be intimidating for students who lack both math and communication skills, causing them to experience anxiety or fear of making mistakes in front of the class. To address this issue, E.N, stated that students who volunteer to present would receive guidance and support from the teacher, who acts as a facilitator in the classroom. This support helps reduce anxiety and provides a sense of security during presentations. Additionally, the teacher offers positive reinforcement to students who are able to solve problems at the board, believing that such recognition helps students feel appreciated and boosts their confidence.

In contrast, D.R emphasized that students are generally more enthusiastic about presenting when done in groups. Group presentations offer a sense of security and mutual support, making students feel more comfortable and engaged. When students experience nervousness during presentations, D.R motivates and encourages them as an effective strategy to help them overcome their anxiety and build courage to speak in class. She also provides flexibility in presentation schedules, allowing students to postpone their presentations to the following week if necessary, recognizing that each student has different comfort levels and abilities.

D.R further explained that giving simple forms of appreciation to students is an effective way to encourage active participation in classroom presentations. For example, when a student successfully writes an answer on the board, the teacher prompts the entire class to applaud as a sign of appreciation. Although simple, this action has a significant impact on building students' confidence. Feeling appreciated by their peers motivates students to participate more actively in learning activities.

The student presentation strategy implemented by teachers sometimes causes feelings of embarrassment among students; however, some students are able to overcome their shyness and confidently present their solutions in front of the class. A.B.A shared that he felt both embarrassed and happy when presenting. Initially, he was nervous about speaking in front of his classmates, but by preparing the night before, he was able to build his confidence. This preparation laid a strong foundation for him to feel more ready and assured during the presentation. To cope with his shyness, A.B.A employed a social strategy by interacting and playing with his friends before the presentation. Socializing helped reduce awkwardness and increased his comfort when speaking in front of the class. This approach highlights his

understanding of the importance of social support and mental preparation in facing challenging situations.

Similarly, P.P.P shared feelings of nervousness, though he expressed a deeper lack of confidence regarding the correctness of his answers. He explained that his anxiety stemmed not only from being the center of attention but also from doubting his own ability to convey the material properly. Past experiences where he felt undervalued or questioned about his responses may have contributed to his hesitation. His fear of speaking up in class may also stem from a tendency to overly focus on others' opinions and expectations, making him feel burdened and reluctant to speak freely. A lack of trust in his own knowledge and a habitual need for external approval could further explain his insecurity. N.I.S also experienced similar challenges. Although he was capable of explaining his prepared answers, he struggled with anxiety and discomfort while speaking in front of the class. He often felt embarrassed and lacked confidence when asked to present, and frequent teasing from classmates exacerbated his nervousness. Such social pressure and anxiety severely affected his ability to present effectively, with the teasing not only disrupting his focus but also deepening his insecurities.

Regarding school policy, Qodarsyach stated that the school encourages teachers to actively engage students in various learning activities. One such method is student presentations, which are believed to not only strengthen academic understanding—such as in mathematics—but also develop students' public speaking skills. By promoting active participation through presentations, the school hopes to enhance students' confidence and communication abilities. This policy aims to create a dynamic learning environment where students are not merely passive recipients of information but actively involved in the learning process, thereby balancing the development of both academic and non-academic skills.

3.1.4. Use of technology

The use of technology is one of the strategies implemented by the mathematics teacher at SMPIT Darul Muqorrobin. In applying this strategy, the teacher utilizes available technologies, such as mathematics software or mobile applications, to facilitate communication and collaboration in learning mathematics.

Fig. 5. Participant dashboard in the Quiziz app

Based on Figure 5, the information shows the number of students present as well as their achievement scores in mathematics. This data provides a clear overview of student participation in teaching and learning activities, as well as their academic performance in the mathematics subject. With this information, teachers can evaluate student attendance and performance, and identify areas that require further attention to enhance the learning process.

Students can use applications to share ideas, collaborate in problem-solving, or engage in online discussions. The teacher recognizes that technology continues to evolve, and there are always new applications that can help improve the quality of learning and student achievement. E.N, stated that the Quizizz application is an effective tool for increasing student interest and participation in learning mathematics. Quizizz successfully creates an interactive and enjoyable learning environment, making students more enthusiastic about participating in mathematics lessons.

According to her, this application allows monitoring of individual student progress by providing performance statistics such as error rates, the time taken to answer each question, and participation levels. She explained that even though quiz results are not included in official assessments, the application still provides significant benefits as an evaluation tool for teachers and as a means of reflection and practice for students. By utilizing this technology, Ms. E.N, can monitor students' progress and ensure they properly understand the material being taught.

Figure 6 shows the student respondent dashboard displaying which students have submitted their assignments and their respective results. This dashboard helps teachers monitor submissions and evaluate students' work more efficiently and effectively. Additionally, it allows teachers to observe answer trends, making it easier to identify areas where students may be struggling and require further assistance. These efforts were carried out to ensure that the learning process continued smoothly despite various disruptions and challenges, such as technical issues or limited internet access. This situation highlights the importance of adaptability and flexibility within the education system during emergencies. Despite the challenges, the use of technology like Google Forms proved that the teaching and learning process could continue effectively. This adaptation not only ensured that students continued to receive the education they needed but also demonstrated the education system’s ability to transform and innovate amid a global crisis.

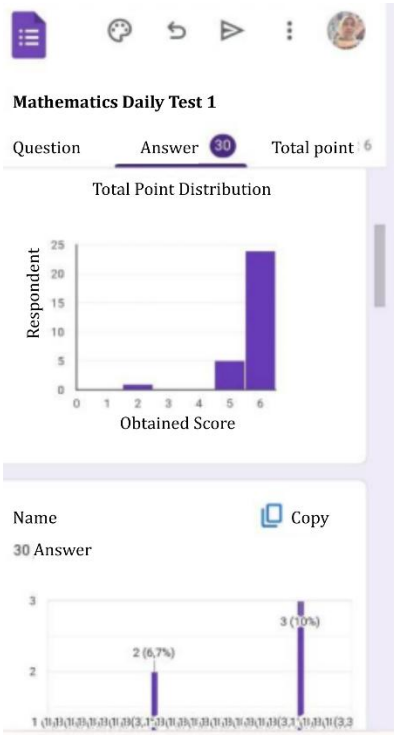

Fig. 6. Google form dashboard

During the COVID-19 pandemic, the use of technology such as the Google Forms application became a primary solution due to limitations on face-to-face learning. School closures and strict social restrictions forced the education system to shift to remote learning methods, and Google Forms became a highly useful technological tool for teachers to continue assigning tasks and quizzes online to students. By using Google Forms, teachers could create quizzes, exams, and daily assignments that students could access from their homes.

D.R also implemented the strategy of using technology to enhance student interest and academic achievement. She observed that students appeared more enthusiastic and that it became easier to deliver material using technology. D.R stated that the integration of technology into the learning process increased student interest and engagement, particularly in mathematics classes. She emphasized that technology not only served as a teaching aid for teachers but also acted as a motivational factor for students. The use of technology, including various applications and tools, has made it easier for students to understand mathematical concepts and materials presented in class. Moreover, the application of technology underscores its active role in education, both in increasing student interest and facilitating the overall teaching and learning process.

A.B.A explained that he used technology, particularly the internet, to assist in completing assignments. For instance, he used Google to search for methods to solve the problems assigned by the teacher, believing that technology significantly eased the process of completing tasks. He noted that applications like WhatsApp and Google were vital in his learning process. Google provided quick access to information and additional explanations when he encountered confusion or difficulties in understanding mathematical material. Furthermore, WhatsApp enabled him to communicate directly with friends who had a better understanding of mathematics. Through this platform, he could ask questions, engage in discussions, and seek help from peers, whether to clarify difficult concepts or to solve problems encountered while completing homework.

P.P.P experienced the same benefits of technology as A.B.A; however, he tended to utilize various online information sources to broaden his understanding of the subject matter. For him, the WhatsApp application served as a convenient and effective communication tool in his learning process. The existence of a dedicated WhatsApp group for his classmates made him feel more comfortable asking questions without feeling embarrassed, as the atmosphere was more relaxed and familiar compared to the classroom environment. In class, the presence of the teacher sometimes made him hesitant to speak up or ask questions for fear of being reprimanded.

Through WhatsApp, communication with his peers became easier and smoother. This platform allowed him to share information, ask about assignments, and discuss academic materials without the anxiety or fear of negative responses.

Similarly, N.I.S experienced an improvement in his learning activities through the use of technology, much like A.B.A and P.P.P. He found that WhatsApp significantly supported his daily learning activities. According to him, WhatsApp was mainly used to ask classmates for help when he felt confused or did not understand how to solve problems given by the teacher. For N.I.S, WhatsApp served as an effective tool to receive immediate assistance from peers who had a better grasp of the material.

However, he also felt that the use of WhatsApp did not significantly contribute to a deeper understanding of the subject matter. He perceived WhatsApp more as a quick communication tool to obtain answers rather than a means to thoroughly enhance comprehension. Although helpful for answering specific questions, it was not sufficient for developing a comprehensive understanding of the lessons. Additionally, based on information provided by Qodarsyach regarding the school's policies on facilitating technology use in mathematics education, it was noted that the school did not yet have language and computer laboratories. Nevertheless, the school provided essential facilities to support the learning process. One such facility was a projector, which teachers often used to deliver materials that required better visual representation.

The school also provided internet access with a speed of 50 Mbps and Wi-Fi coverage throughout the campus. These facilities enabled both teachers and students to access a wide range of online resources to support learning activities. Teachers could utilize the internet to find new materials, references, and other supporting resources according to their instructional needs. Although the school had not yet established a fully equipped laboratory, it continued to leverage available technology and Wi-Fi access to expand information availability and enhance the learning process. This initiative reflected a proactive approach to overcoming challenges and ensuring the continuity of education at the school.

3.2. Discussion

Based on the research findings, several key insights were identified regarding the mathematics teacher's instructional communication in the learning process, which influences students' interest in learning. Effective communication by the teacher is one of the main factors. The mathematics teacher employs four instructional communication methods as teaching tools in the classroom, with the primary goal of increasing students' interest in learning mathematics (Amany et al., 2023; Mursalin et al., 2025; Yana & Husnita, 2023). This interest, in turn, can enhance students' motivation to better understand the theory and apply it in their daily lives. The teacher's communication skills in providing explanations for each teaching method also facilitate students in completing their tasks correctly and efficiently (Priadi, 2020; Rybchynska, 2023). Furthermore, the teacher ensures a balanced distribution of rights and responsibilities to each student, regardless of their ability in mathematics. The teacher also provides motivation and appreciation to each student as a form of care and as a lesson in respecting both the strengths and weaknesses of students in completing tasks. This has an extraordinary effect on students, making learning mathematics, which was previously seen as dull due to formulas and numbers, much more engaging. Although challenges and obstacles arise in the learning process for both students and teachers, the teacher succeeds in building a positive relationship with the students, understanding individual characteristics, and offering support when students face difficulties.

On the other hand, the greatest challenge faced is related to students' mental attitudes in the instructional communication process (Baka et al., 2020; Chew & Cerbin, 2021; Ninsiana et al., 2022). One of the challenges is when students must possess both communication skills and computational abilities to present their mathematics tasks. If these skills are lacking, students tend to feel anxious, which leads to feelings of shame, low self-confidence, uncertainty about their answers, and being burdened by the expectations and pressures from others. Moreover, taunting from peers when students try to explain the material further exacerbates this situation. The key to addressing this issue lies in the students' mindset. When students have a strong and positive mentality, the problems or challenges they face are easier to overcome (Rahiem, 2021). However, if the students' mentality is still weak, the teacher makes efforts to provide more motivation to these students (Ikhwan et al., 2020; Muslim et al., 2020; Rahiem, 2021). One way is by offering emotional support and enhancing their interest and understanding of the material. Therefore, effective communication from the teacher in delivering motivation is crucial to help students build self-confidence, although this process requires time.

Additionally, support from the school is also essential. The school provides moral support to the teachers, making them feel valued and appreciated for their efforts. One form of support is by offering advice on organizing the teaching schedule to meet the teachers' needs, such as group discussions, collaborative projects, student presentations, or the use of technology. Although the school faces limitations in technological facilities, teachers still strive to be creative and innovative in finding ways to develop the mathematics teaching methods in the classroom. Some of these include using applications such as Quiziz, Google Forms, and social media platforms like WhatsApp in the learning process. While the use of technology may not fully increase students' interest in learning, the variety of teaching methods applied helps prevent students from becoming bored with classroom lessons. The

school also provides free Wi-Fi access for teachers to facilitate the learning process in the classroom.

From the three identifications above, the author reflects on the educational process in the mathematics teacher's teaching practice. Several aspects need to be carefully considered. The first is how teachers can measure and evaluate the quality of their teaching, the second is students' learning skills, and the third is how to address learning barriers. Mathematics teachers must have the right strategies in instructional communication to assess classroom learning activities. One key aspect to focus on is the quality of teaching, which can be improved using instructional communication methods that help enhance students' interest and understanding of mathematics. Measuring and evaluating teaching quality is a time-consuming process because it is a long-term educational effect. A simple observation made by the author indicates that students have unique learning approaches in the classroom. Some students prefer to work in groups to understand the material, while others do not. Some students enjoy collaborative project simulations, as they believe it fosters their creativity in simulating mathematical concepts. Others prefer to present in class to demonstrate their communication skills and their ability to comprehend the lesson. Furthermore, barriers encountered during the learning process serve as materials for teachers to continue their creativity and innovation in developing new teaching methods. This is done to ensure that class time is spent on activities that support students' understanding and effective learning, without overwhelming them with excessive assignments.

4. Conclusions

Instructional communication methods are tools used by teachers to guide and nurture students in the classroom, enabling them to understand the material effectively. In this context, teachers must have the right strategies for instructional communication with students. Communication skills and abilities are essential assets for teachers to establish good rapport with students. Students' mentalities also pose significant challenges for teachers in guiding them to understand the lessons. Therefore, the school must play an active role in creating a better and more effective learning environment in the classroom.

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