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The Role of Context and Discussion for Improvement Students' Oral and Written Mathematical Communication

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Abstract. Problems in learning mathematics on aspect communication mathematical oral and write student still low . this _ caused lack of given opportunity to student for argue , present ideas and his opinion in study math . Ability communication mathematical oral could be measured with indicator communication mathematical oral like presentation , discussion , whereas ability communication mathematical writing could be measured with write answer , known from question , what is being asked in question , and give conclusion in settlement question end . Role context and discussion in learning mathematics so important for increase ability communication mathematical oral and write student . Destination from study this is for increase ability communication mathematical oral and write through role context and discussion . Sample in study this is student class VIIE SMP Negeri 3 Base drain Regency Pelalawan Riau Province totaled 28 students . Method in study this is study qualitative . Result from study this is role context and discussion could increase ability communication mathematical oral and writing at a good level . With thereby could concluded that role context and discussion could increase ability communication mathematical good in a manner oral nor write.

Key words: Context, Discussion, Oral and Written Mathematical Communication

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INTRODUCTION

Learning mathematics through context and discussion can improve mathematical communication skills both orally and in writing, and change the paradigm that one of the goals of learning mathematics is learning to think (Adi et al., 2022). In the process of learning mathematics students are still not given the opportunity to express their ideas and opinions during class learning. Discussion and writing activities can have an impact on improving mathematical communication skills both orally and in writing (Fauzan et al., 2018). Students' written mathematical communication skills can be measured through solving math problems such as writing down answers to what is known, what is being asked, and being able to find answers (Rusdi et al., 2020) . However, so far students are still low in mathematical communication skills both orally and in writing, this is due to the lack of opportunities given to students in learning mathematics to solve mathematical problems related to mathematical communication.

In the learning process mathematics student need get used to for give argument on every the answer as well as give response on answer given _ by others, so what 's on studied Becomes more meaning for him (Maulita & Marzuki, 2020) . this _ means that in learning is important give time for student for discuss in answer , respond question and statements of others with correct argument _ and clear (Hosshan, 2022) . If the teacher dominates the learning activities in the class in conveying and imparting knowledge to their students, then the opportunity for students to acquire and construct mathematical concepts is very small. Students listen to and watch teachers explore and construct mathematical concepts, then students imitate and memorize various forms of rules, formulas, procedures or algorithms in exploring and constructing mathematics (Oonk et al., 2015). Finally, students are only trained to work on math problems as conveyed by the teacher. Students will encounter various difficulties when facing or solving math problems that are not or have not been trained by the teacher (Zeynivandnezhad & Bates, 2018).

When mathematics learning activities are dominated by the teacher, the teacher provides and explains various concepts and formulas or algorithms that he considers important for students, then students tend to be passive

(Öztürk et al., 2020). Learning mathematics like that does not instill understanding of concepts so that it does not invite students' critical attitudes. Passivity of students in learning mathematics can increase students' dependence on teachers in acquiring knowledge and teachers being the only source of knowledge. Students are not motivated to explore and construct their own mathematical knowledge, so that students acquire more mathematics through notification than doing exploration (Shahbari, 2018).

In the updated mathematics learning model, students are no longer seen as learning objects or targets. Students have sufficient activity opportunities to construct knowledge and explore mathematics, so that mathematical concepts can be well understood (Pratt, 2020) . Of the five kinds of roles and tasks of the teacher to maximize student learning opportunities, one of them is to provide freedom of communication to students to explain their ideas and listen to the ideas of their friends. Likewise, one of the roles and tasks of the teacher in learning mathematics now and in the future is to regulate the intellectual activities of students in class such as discussion and communication (Azhari & Fajri, 2021).

Referring to the description of the role and duties of the teacher now and in the future as well as the importance of developing and improving mathematical communication skills above, the teacher must improve the quality of his learning. In activity learning that is carried out , the teacher can accommodate , facilitate student ideas , so student could illustrate and interpret various problem in language and statements mathematics as well as could complete problem the according to rule or rule math.

The learning conditions in which students learn passively are clearly unfavorable to their learning outcomes. For this reason, the teacher's efforts are needed so that students learn actively (Sedaghatjou, 2018) . Learning mathematics, one of the ways to improve the quality of education is to enable students to learn related to oral and written mathematical communication. And the proportion of student activity in learning will be more productive if students study in groups (Teledahl, 2017) . Learning mathematics can maximize the process and results of learning mathematics, teachers need to encourage students to be actively involved in discussions, ask and answer questions, think critically, explain each answer given, and provide reasons for each answer submitted. The learning given in this condition emphasizes the use of discussions, both discussions in small groups and discussions in the class as a whole (Julie, 2020).

METHODS

This research is an exploratory qualitative research and was carried out at SMPN 3 Pangkalan Kuras with subjects in class VII E consisting of 2 8 students. The instrument in this study was to use observation and provide mathematical questions related to the context related to oral and written mathematical communication skills.

RESULTS AND DISCUSSION

Table 1. Indicators of Oral Mathematical Communication

Characteristics	Indicator
Write	Student could write answer from question known , asked , and complete with Correct and give reason
Presenting	Student could explain from question related answer with language alone to friend or teacher
Discussion	Student could give argument related settlement question to friend another group or to the teacher

Table 2. Indicators of Mathematical Communication Write

Characteristics	Indicator
Write	Student could write what is known from questions , what to ask , and complete question with Correct
Draw	Student could describe in a manner simple what is known from matter , fine using symbols, notations .
Expression Mathematical	Student could complete and write conclusion with kalmiat " so .."

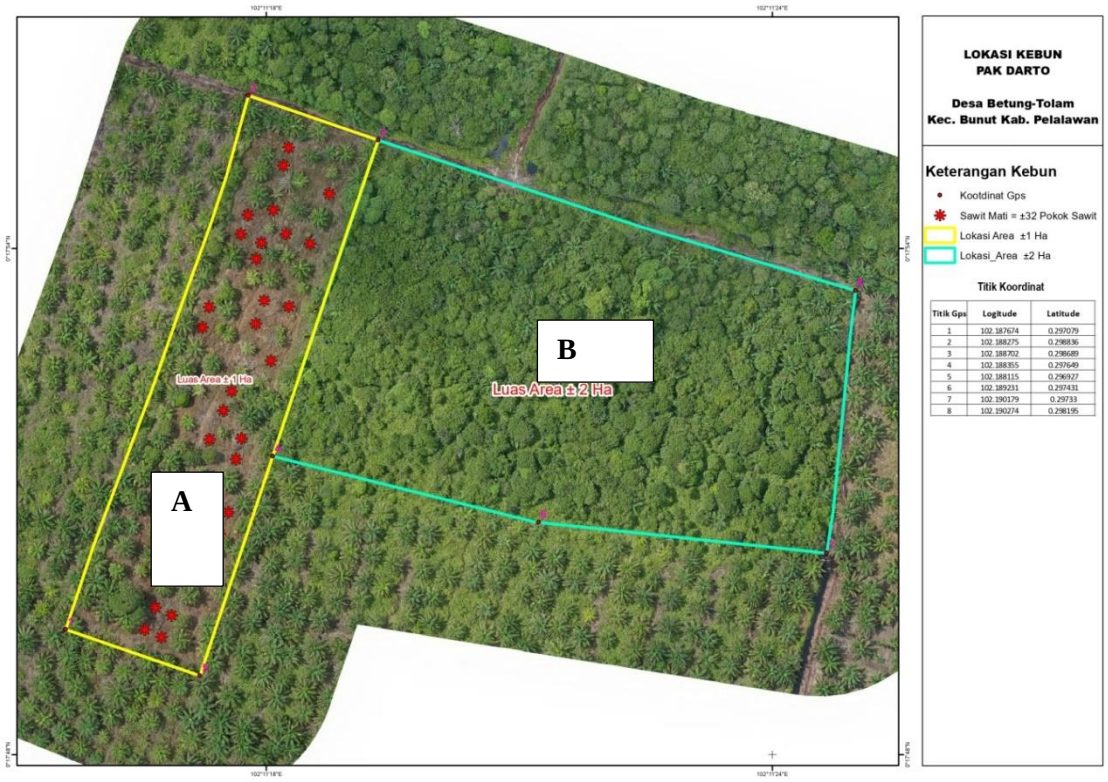

Figure 1. Examples of context in learning mathematics

Look at picture 1. Students are invited to have discussions either individually or in groups to observe pictures of Mr. Darto's oil palm plantation in the Bunut sub-district, Pelalawan Regency. Try to compare between plantation A and plantation B which has more oil palm trees? Give your reasons! If plantation A has an area of 1 hectare and plantation B has an area of 2 hectares, how many oil palm trees will there be if Pak Darto plants a 9x9x9 meter size? give your reasons!

CONCLUSION

Ability student in communication mathematical good in a manner oral nor writing need get attention for more developed . Ability communication mathematical oral and write is the required abilities in study and in mathematics that myself , even need for student in face problems in life student day this and on coming day _ come . Ability communication mathematical oral and write in learning mathematics could through context and discussion.

Communication Mathematical oral and write is part from think mathematical level characteristic height _ complex, because that focused learning _ on ability the need precondition draft and process from that over low . It means ability communication and solving problem mathematical student no there is without ability good understanding . _ this _ covers Theory nor method learn or teach it . For that in learning need considered Duty mathematics as well as atmosphere supportive learning _ for push ability the . Consideration this concerns taking decision learning used in the class taken _ by the teacher.

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REFERENCES

Adi, BS, Irianto, DP, & Sukarmin, Y. (2022). Teachers' perspectives in motor learning with a traditional game approach for early childhood. *Educational Horizon , 41* (1), 1–11. https://doi.org/10.21831/cp.v41i1.36843

Azhari, B., & Fajri, I. (2021). *International Journal of Mathematical Education in Distance learning during the COVID-19 pandemic : School closure in Indonesia Distance learning during the COVID-19 pandemic : School* .

https://doi.org/10.1080/0020739X.2021.1875072

Fauzan, A., Musdi, E., & Afriadi, J. (2018). Developing learning trajectory for teaching statistics at junior high school using the RME approach. *Journal of Physics: Conference Series* , *1088* , 0–7. https://doi.org/10.1088/1742-6596/1088/1/012040

Hosshan, H. (2022). *Perspectives of Teachers on Supporting The Participation of Students with Learning Disabilities in Inclusive Secondary Schools : A Qualitative Study* . *37* (1), 47–59.

Julie, C. (2020). International Journal of Mathematical Education in Modeling competencies of school learners in the beginning and final year of secondary school mathematics. *International Journal of Mathematical Education in Science and Technology* , *0* (0), 1–15. https://doi.org/10.1080/0020739X.2020.1725165

Maulita, SR, & Marzuki, A. (2020). *Developing mathematical reasoning problems type two-tier multiple choice for junior high school students based on ethnomathematics of jember fashion carnival. Developing mathematical reasoning problems type two-tier multiple choice for junior high school students based on ethnomathematics of jember fashion carnival* . https://doi.org/10.1088/1742-6596/1563/1/012036

Oonk, W., Verloop, N., & Gravemeijer, KPE (2015). Enriching practical knowledge: Exploring student teachers' competence in integrating theory and practice of teaching mathematics. *Journal for Research in …* . https://pubs.nctm.org/view/journals/jrme/46/5/article-p559.xml

Öztürk, M., Akkan, Y., & Kaplan, A. (2020). Reading comprehension, Mathematics self-efficacy perception, and Mathematics attitude as correlates of students' non-routine Mathematics problem-solving skills in Turkey. *International Journal of Mathematical Education in Science and Technology* , *51* (7), 1042–1058. https://doi.org/10.1080/0020739X.2019.1648893

Pratt, AB (2020). Curriculum in conflict: how African American and Indigenous educational thought complicates the hidden curriculum. *Curriculum Journal* , *31* (1), 97–114. https://doi.org/10.1080/09585176.2019.1661862

Rusdi, Fauzan, A., Arnawa, IM, & Lufri. (2020). Designing Mathematics Learning Models Based on Realistic Mathematics Education and Literacy. *Journal of Physics: Conference Series* , *1471* (1), 0–10. https://doi.org/10.1088/1742-6596/1471/1/012055

Sedaghatjou, M. (2018). Advanced mathematics communication beyond modality of sight. *International Journal of Mathematical Education in Science and Technology* , *49* (1), 46–65. https://doi.org/10.1080/0020739X.2017.1339132

Shahbari, JA (2018). Mathematics teachers' conceptions about modeling activities and its reflection on their beliefs about mathematics. *International Journal of Mathematical Education in Science and Technology* , *49* (5), 721–742. https://doi.org/10.1080/0020739X.2017.1404650

Teledahl, A. (2017). How young students communicate their mathematical problem solving in writing. *International Journal of Mathematical Education in Science and Technology* , *48* (4), 555–572. https://doi.org/10.1080/0020739X.2016.1256447

Zeynivandnezhad, F., & Bates, R. (2018). Explicating mathematical thinking in differential equations using a computer algebra system. *International Journal of Mathematical Education in Science and Technology* , *49* (5), 680–704. https://doi.org/10.1080/0020739X.2017.1409368