# MATHEMATICS COMMUNICATION SKILL REVIEWED ON SELF CONFIDENCE, MATHEMATICS DISPOSITION IN MEAs LEARNING WITH GEOGEBRA ASSISTANCE

Gea Dianara Chikita[a*]

[a]*Universitas Negeri Semarang, Sekaran Gunungpati Campus, Semarang 50229, Indonesia*

**Email address : geadianara13@students.unnes.ac.id*

Abstract

This study aims to find out what are the objective research, methods research, and research trends in articles . The method used in this article is Study Literature Review (SLR) by analyzing qualitative studies related to Students' Mathematical Communication Skill reviewed based on students' self confidence and mathematical dispositions in Eliciting Activities learning models (MEAs) with Geogebra-assisted in 2016 - 2023. The results of the study show that from 15 reviewed articles that most students who do Eliciting Activities learning models (MEAs) with geogebra-assisted will have an increase in Mathematical Communication abilities in terms of self-confidence and students' mathematical disposition..

Keyword:

Mathematical communication skill, self confidence, mathematical disposition, MEAs, Geogebra.



## 1. Introduction

Learning mathematics is an interaction activity between students and teachers, often associated with numbers and trying to improve students' logic and thought processes. According to NCTM (2000), the skills that students must develop when learning mathematics are reasoning skills, problem solving skills, mathematical communication skills, connection skills, and representation abilities. Given the current reality, many students in Indonesia still have low mathematical communication skills. Communication skill is an important part of mathematics, because it is a tool for transmitting mathematical knowledge or as a foundation for building mathematical knowledge, based on Noviyana, et al (2019). Mathematical communication skills are students' ability to coherently express mathematical ideas to friends, teachers, and others through spoken and written language accompanied by explanations and justifications.

In addition to requiring mathematical communication skills, it is expected that education will also help students recognize and improve their affective qualities. The self-confidence and mathematical disposition of students during early learning is one of the affective aspects that can be developed during the learning process of mathematics. Mathematical aptitude is the lack of interest, dedication, denial, and other factors that make it difficult for a student to pursue and succeed in mathematics in a positive way. The character of mathematics will be developed and strengthened through sound knowledge and perception. In contrast, having a sense of self-awareness or self-

acceptance is a skill that any teacher must possess because it will make it easier for them to grasp whatever ideas they may have while solving math problems (Andriana & Aripin, 2019). Research by Sari, N., & Fitri, H. (2022), shows that there is a relationship between mathematical disposition and mathematical communication skills. Research by Noviyana, IN., Dewi, NR., & Rochmad (2019), also shows that having strong self-confidence will help motivate students to be able to improve their mathematical communication skills and mathematics learning achievement. Both of these are expected if we review them will affect students' mathematical communication skills.

In order to support the improvement of students' mathematical communication skills, it is necessary to develop learning models that can improve students' mathematical communication skills. One learning model that can be applied to develop students' mathematical communication skills is the Model Eliciting Activities (MEAs). The Eliciting Activitie learning model is a learning model that can spur student effectiveness in the learning process, where students are required to be active and work together to get the right modeling of the problems given then present their findings in front of the class. This learning can increase student participation to be more active in learning, especially in their study groups so that students with low abilities can express themselves in responding to problems in their own way, Tohimin (2020). Then according to Latif Ariyantoa, et al (2021) The factors that influence the success of learning the Eliciting Activities Model are when helping students understand contextual problems so as to help students solve problems.

Now, we have entered the digital era where teachers must have the skills to use the right digital media in designing mathematics learning in order to increase students' understanding. Therefore, in this study, further studies will be conducted regarding mathematical communication abilities in terms of self-confidence and students' mathematical disposition in eliciting activity learning model (MEAs) with the help of Geogebra. GeoGebra is a software that can visualize mathematical objects quickly, accurately and efficiently, based on Nur (2016). Geogebra is considered to have potential in helping students to understand geometric concepts. According to Made DKK (2022), the Geogebra-assisted Eliciting Activities Model has a positive effect on the ability to understand students' mathematical concepts and dispositions.

Based on the explanation above, writing this article aims to find out the interrelationship between self-confidence and mathematics disposition to mathematics communication skills on Mathematics Eliciting Activities (MEAs) assisted by Geogebra in 2016-2023.

## 2. Methode

The method used in this study is to use the Systematic Literature Review (SLR) method. The Systematic Literature Review method is a method that is systematic, explicit and reproducible which aims to identify, review, evaluate, and interpret works of existing research results and ideas. In this study, the researcher conducted a series of review processes and identified articles that were relevant to the keywords in this study in a

structured manner. In the research arranged in a structured manner with the following steps.

The first step, compiling the formulation of the problem. The formulation of the problem in this study is as follows confidence and students' mathematical dispositions in learning the MEAs eliciting activities model with the help of GeoGebra in 2016-2023.

The second step is the process of searching or obtaining relevant sources that are used to answer the problem formulation. Search process by applying inclusion and exclusion criteria. The search process was carried out using the Google Scholar and ResearchGate databases with the keywords mathematical communication skill, self confidence, mathematical disposition, MEAs, Geogebra. Inclusion and exclusion criteria were used to determine whether the data obtained could be used in SLR research or not. Exclusion criteria are criteria that, if met, cause the object to not be used in research, while the inclusion criteria are, if met, it can result in potential research objects. In this study the inclusion criteria included national or international articles relevant to the topic to be studied,

The third step is Screening and Eligibility or Quality Assessment (QA). The data obtained was evaluated according to the following assessment criteria. QA in this study includes: 1) The article was published in 2016-2023; 2) Does the article write down the research objectives or the type of research or research design used; and 3) Does the article use the MEAs Learning model and Geogebra media in the learning carried out. From each QA will get a yes or no answer.

The fourth step is the stage of data collection. In this study, the data collected for review was in the form of primary data, namely data collected through interviews, observations, surveys, or according to needs. Then, data analysis. The data that has been collected is then analyzed according to the RQ. The final step is deviation from protocol. During the research there was a change, namely to refine the equivalent words for search keywords in the database..

## 3. Result and Discussions

By applying the inclusion criteria for all research relevant to the keywords mathematical communication skill, self confidence, mathematical disposition, MEAs, and Geogebra, 15 articles were obtained which were further categorized, including year of publication, research method, level of education, and research objectives. Data descriptive presented in the following table.

**Table 3. 1** Number of studies based on criteria.

| | | |
|---|---|---|
| Year of Publication | 2016 | 1 |
| | 2017 | 0 |
| | 2018 | 2 |
| | 2019 | 3 |
| | 2020 | 1 |
| | 2021 | 4 |
| | 2022 | 2 |
| | 2023 | 0 |

| | | |
|---|---|---|
| Research methods | Quantitative Research<br>Study of literature<br>Quasi experiment<br>Qualitative Descriptive<br>Mix Method<br>Correlational | 3<br>4<br>5<br>1<br>1<br>1 |
| Educational level | Junior High School<br>Senior High School<br>Collage | 8<br>3<br>1 |
| Research purposes | - Knowing the effect of MEAs on improving Mathematical Communication Skill (MCS). | 5 |
| | - Knowing the effect of self-confident students on Mathematical Communication Skill (MCS). | 2 |
| | - Knowing the effect of students' mathematical disposition on Mathematical Communication Skill (MCS). | 2 |
| | - Knowing the effect of Geogebra-assisted mathematics learning on improving Mathematical Communication Skill (MCS). | 3 |
| | - Knowing the effect of Geogebra-assisted MEAs on improving Mathematical Communication Skill (MCS). | 1 |

**RQ1 What are the research objectives and research methods used in the article on Students' Mathematical Communication Skill reviewed based on self-confidence and students' mathematical dispositions in eliciting activities models (MEAs) learning with the help of GeoGebra in 2016-2023.**

In Figure 1 below, it shows that research in 2016-2023 regarding Students' Mathematical Communication Skill was reviewed based on self-confidence and students' mathematical disposition in learning the MEAs eliciting activities model with the help of GeoGebra, there were differences in research focus. There are 5 research focuses found from 7 articles. The focus of research to determine the effect of MEAs on improving students' mathematical communication skills (MCS) shows a percentage of 39%. It can be concluded that research in 2016-2023 regarding Students' Mathematical Communication Skill was reviewed based on self-confidence and students' mathematical dispositions in learning the MEAs eliciting activities model with the assistance of GeoGebra tended to focus on the effect of MEAs on Students' Mathematical Communication Skill.

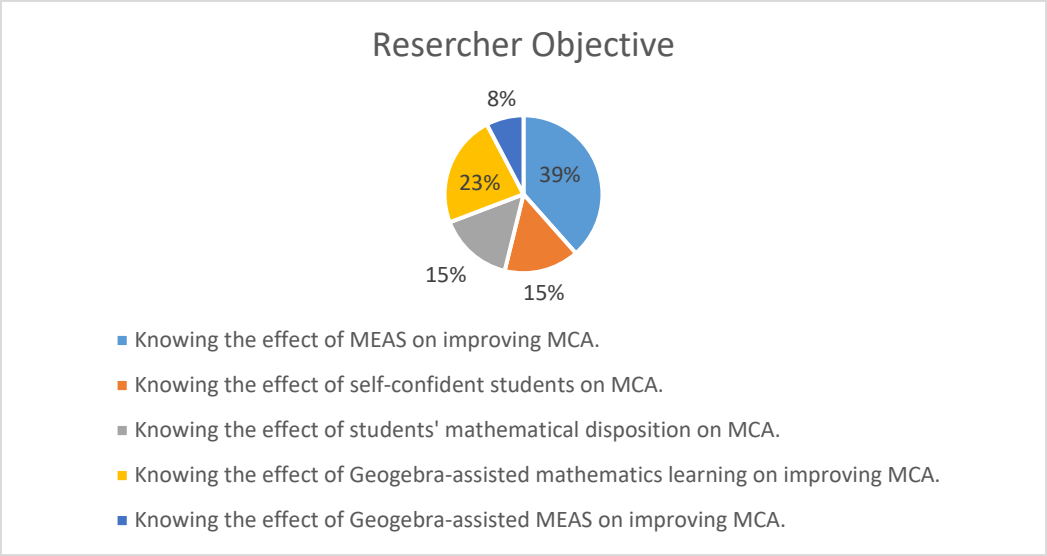


**Figure 3. 1** Research Objectives

Then for Figure 2 below, it provides an overview of the research methods used in 2016-2023 regarding students' mathematical communication skill reviewed based on self confidence and students' mathematical dispositions in eliciting activities learning model (MEAs) with the help of GeoGebra. It can be seen that the 15 articles have varied research methods. It can be seen that research using the Quasi Experiment research method tends to be used in research regarding research in 2016-2023 concerning students' mathematical communication skill in terms of self-confidence and students' mathematical disposition in eliciting activities learning MEAs model with the help of GeoGebra.

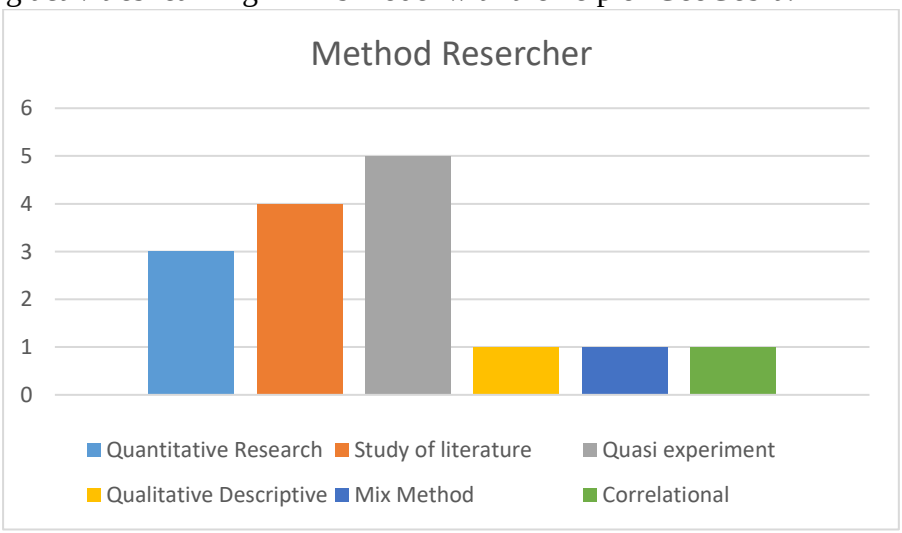


**Figure 3. 2** Research Methods

**RQ2 How is the relationship between Self Confidence and Mathematical Disposition of students with Eliciting Activitie learning Model (MEAs) with Geogebra-assisted in 2016-2023 to Students' Mathematical Communication Skill.**

Based on the results of the research and testing of the data that the researchers obtained in class VII students of SMP Negeri 1 Banuhampu, it can be concluded that there

is a relationship between mathematical disposition and mathematical communication skills. This can be seen from the correlation value, which means that there is a relationship between mathematical disposition and mathematical communication skills (Novita Sari, 2022). So it can be concluded that students' mathematical communication skills can increase when viewed from a mathematical disposition. There is research (Winarni, S., et al., 2021) whichshowed that the students' mathematical disposition did not have a significant effect on communication skills. This shows there are other factors that must be considered in improving students' mathematical communication skills and problem solving.

Theoretically, students will have good mathematical communication skills if these students also have good self-confidence. This can happen because students have a positive view of themselves and their abilities, so students don't feel afraid of being wrong or anxious when solving problems regarding mathematical communication (Noviyana, IN., Dewi, NR., & Rochmad, 2019). In addition, in a study using descriptive qualitative research methods (Nuranisa. et al, 2022) it was concluded that if students have a low level of self-confidence, students' communication skills will also be low. Based on the research that has been done, it can be concluded that students' Self Confidence, Mathematical Disposition in model eliciting activity (MEAs) learning can increase Students' Mathematical Communication Skill.

**RQ3 How is the research trend regarding Students' Mathematical Communication Skill reviewed based on self confidence and students' mathematical dispositions in learning the MEAs eliciting activities model with the help of Geogebra in 2016-2023.**

The frequency of studies related to students' Mathematical Communication abilities was reviewed based on self-confidence and students' mathematical disposition in learning the MEAs eliciting activities model with the help of GeoGebra which was published from 2016 to 2023 experiencing ups and downs. In 2020 towards 2021 there will be a significant increase, but in 20221 towards 2023 there will be a decrease. So it can be concluded that research trends regarding students' mathematical communication abilities were reviewed based on self-confidence and students' mathematical dispositions in learning the MEAs eliciting activities model with the help of GeoGebra in 2016-2023 were inconsistent.

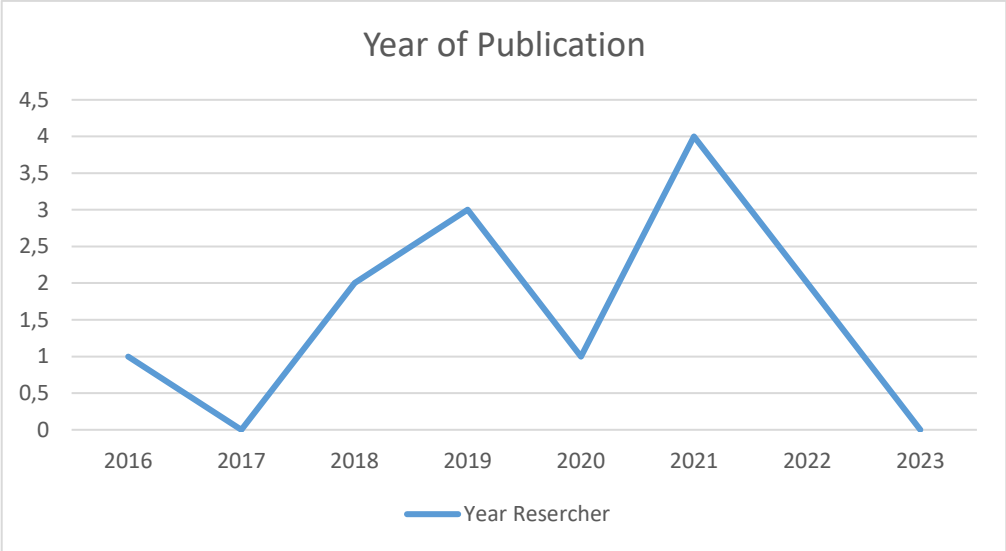


**Figure 3. 3** Year of Publication

Studies related to students' mathematical communication skills are reviewed based on self-confidence and students' mathematical disposition in learning the MEAs eliciting activities model with the help of Geogebra which is used as data in this study conducted from junior high school to tertiary level with detailed distribution in the diagram below.

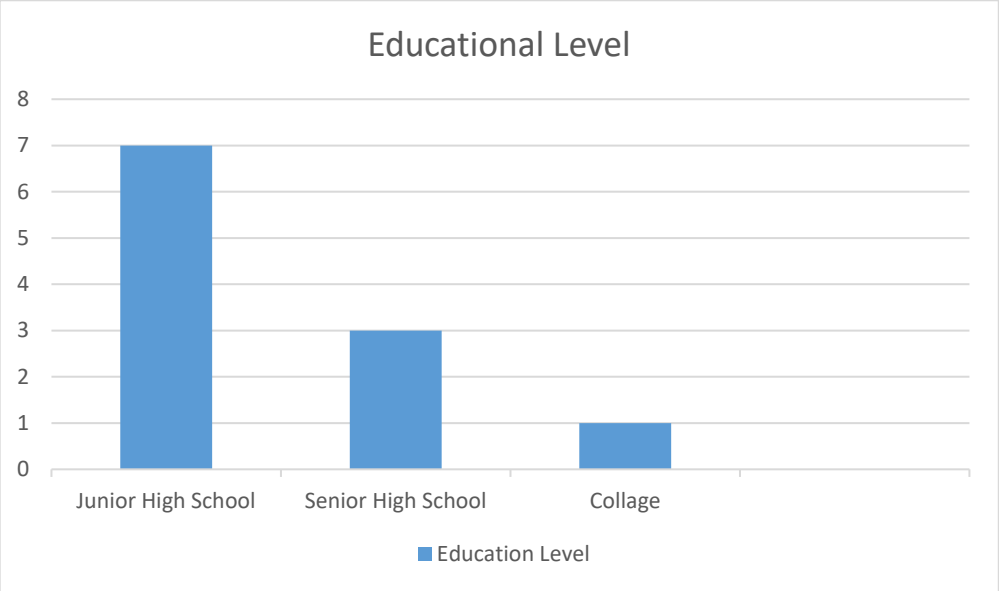


**Figure 3. 4** Educational Level

The diagram above shows that research on students' mathematical communication skills is reviewed based on self-confidence and students' mathematical disposition in learning the MEAs eliciting activities model with the help of Geogebra in publications in 2016-2023. Of the 15 articles reviewed, all research authors are from Indonesia. Research on the eliciting activities learning model in Indonesia has done a lot of research on students' mathematical communication abilities. Research conducted at the junior high school level tends to be mostly conducted on research on students' mathematical

communication abilities in terms of self-confidence and students' mathematical dispositions in learning the MEAs eliciting activities model with the help of GeoGebra.

## 4. Conclusion

Based on the presentation of the results and the previous discussion, it was concluded that research related to Mathematical Communication Skill in Review Based on Students' Self Confidence can improve students' mathematical communication abilities. Judging from the objectives and methods used in the article about Students' Mathematical Communication Skill reviewed based on self confidence and students' mathematical disposition in learning the MEAs eliciting activities model with the help of GeoGebra in 2016-2023 it can be concludedthat learning the Eliciting Activitie (MEAs) model can improve Students' Mathematical Communication Skill. The link between self-confidence and students' mathematical disposition with Geogebra-assisted MEAs is able to influence students' mathematical communication abilities in a positive direction. Even though it has a good influence, it is a trendresearch in this case is still less attractive and only focuses on junior high school students. So based on a literature review study of 15 articles it can be concluded that most students who do MEAs learning assisted by geogebra will have an increase in Mathematical Communication abilities in terms of self-confidence and students' mathematical disposition.

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