e-ISSN 2963-2870
Vol 5 2024

# ANALYSIS OF ARGUMENTATION AND DECISION-MAKING SKILLS THROUGH PROBLEM-BASED LEARNING IN DISTANCE LEARNING IN GRADE V STUDENTS

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**Abstract**

Argumentation and decision-making skills are important competencies for students in the modern era, especially in facing global challenges that require critical thinking and the ability to make evidence-based decisions. This skill not only supports the understanding of scientific concepts, but also develops students' ability to analyze situations, evaluate alternatives, and defend their views with logical arguments. This study aims to analyze the improvement of argumentation and decision-making skills through the Problem-Based Learning (PBL) model in grade V students of SD Negeri 2 Penolih during distance learning in 2022, post-COVID-19 pandemic. This study uses a descriptive qualitative approach, with 14 students in grade V. Research instruments include observation sheets on arguments and decision-making skills, as well as interviews with teachers. The data were analyzed by triangulation techniques through grouping, reduction, and conclusion drawn. The results showed that 60.7% of students were able to show argumentation skills with an understanding level of 78.57% and evaluation skills of 42.45%. Decision-making skills were also demonstrated by 66.06% of students, with details: 85.7% in decision-making, 42.85% in making choices, 71.42% in collecting information, and 64.28% in making questions. Interviews with teachers showed that PBL was effective in developing argumentation and decision-making skills in science learning, even though it was done remotely. This study shows that the PBL model in the distance learning scheme is also feasible, especially in science learning, so that it can be a reference for further research.

Keywords: Argumentative Skills, Decision Making Skills, Distance Learning, Problem Based Learning Models, Science Learning, Grade V Students.

## 1 INTRODUCTION

Science learning in elementary school not only focuses on knowledge of natural phenomena that occur daily but emphasizes skills and understanding of how scientific process skills are. The Indonesia curriculum encourages the application of science learning to build an understanding of students' concepts, thinking skills, and skills (Pratiwi et al., 2019). . The ability to argue and the ability to make decisions are some of the skills in the science learning process that need to be developed from an early age. Decision-making skills are one of the higher-level

thinking skills that students need both in academic and daily life (Widana, 2017) (Rahman, 2019) (Majeed, 2021). This skill is temporary for argument skills in science learning not only limited to brainstorming but also encouraging discoveries or innovations that can be done in collaboration with other students or individually (Probosari et al., 2017).

Argumentation skills are activities that facilitate the understanding of cognitive activities in building scientific knowledge (Viyanti et al., 2016). Argumentation skills involve critical and logical thinking between concepts and situations, so these skills are particularly useful for explaining interconnected facts, procedures, ideas, and problem-solving methods (Soekisno et al., 2015). In learning activities, this skill develops along with the interaction carried out by students with other students.

Decision-making is a skill that combines science and art in choosing the best solution or action from the various options and steps available to solve a problem (Pascariati & Ali, 2022). Decision-making skills are the ability to evaluate the effectiveness of outcomes and choose the most appropriate option from the various available alternatives (Majeed, 2021). Decision-making is how a person interprets, responds, and how a person reacts to the situation they are faced with (Pascariati & Ali, 2022). This skill includes the activity of predicting the possible consequences of each action including paying attention to the usefulness of the consequences (Heidari & Shahbazi, 2016).

From the results of observations in grade IV of SD Penolih 2, it is known that during distance learning after the COVID-19 pandemic, teachers used the lecture method. This method was chosen because it is considered more effective for completing learning materials and catch up with learning loss. Based on interviews with teachers, it was found that during learning at school, teachers occasionally facilitate discussions for students. However, the discussion was considered less effective because only a few students actively argued and made decisions. The teacher also explained that decision-making is carried out together with guidance, so students are not fully able to make decisions independently.

The results of observations made in grade IV of SD Penolih 2 show that the learning process that is generally carried out emphasizes more on the use of the lecture method because this method is seen by teachers as more effective in completing the learning material. Based on the interview, the teacher explained that the teacher had also facilitated students in discussion activities but the discussions that took place were considered less effective because the students who made decisions and argued were only certain students. Furthermore, the teacher explained

that decision-making is carried out together with the guidance of the teacher so that students are not fully able to make decisions independently.

The daily test results on the digestive system material of science subjects are still below the average Minimum Completeness Criteria/Kriteria Ketuntasan Minimal (KKM), which is 60. The low achievement of daily test scores in the realm of knowledge (cognitive) and argumentative skills is suspected to be related to the learning process (Kaniawati & Suhandi, 2014). One of the reasons for low argumentation skills is that the classroom learning model does not facilitate students to develop their ability to make claims, use data to support their claims and justify claims with scientific evidence (Syerliana & Setiawan, 2018). Another fact shows that students lack debating skills because they are not used to doing so whereas, in science learning, scientific argumentation is a form of scientific communication that is an integral part of the essence of science (Probosari et al., 2017).

The teacher explained that the reason for the low decision-making skills in students is due to the lack of involvement in the decision-making process and not involving them in a democratic environment (Sever & Ersoy, 2019). In line with these causes, the learning activities that are carried out encourage students to be able to make decisions from two solutions or options so that there are problems that students should solve. Thus, the ideal learning activity is exploratory and not only instructive.

The implementation of distance learning after the pandemic is one of the factors that causes teachers to hesitate to apply several varied learning models. The results of the interview explained that during learning from home, teachers are more likely to monitor the learning outcomes of their students by communicating with parents. According to teachers, when the face-to-face learning process is more focused on completing material that has not been learned while students are learning from home. In fact, the provision of materials and assignments during distance learning should be directed more towards life skills and social skills (Handayani & Pradana, 2021).

Problem-based learning (PBL) is one instructional model anticipated to assist students in advancing their scientific reasoning skills from a concrete level to a more formal level. (Wulandari & Shofiyah, 2018). Besides improving students' conceptual understanding, PBL models can be achieved well if the teacher can integrate the three realms of education with the skills of argumentation in the PBL model. (Pratiwi et al., 2019).

Previous research has shown that the PBL model can improve critical thinking skills (Handayani et al., 2021) and creative thinking (Handayani, 2022) in science learning grade V. This study is focused on finding out the extent to which the PBL model can improve argumentation skills and decision-making skills. Furthermore, this study was also conducted to see an overview of the level of argumentative skills and decision-making in science learning using the PBL model in grade V students of SD Negeri 2 Penolih.

## 2 METHODOLOGY

The method used in this study is qualitative descriptive. The measurement instruments used were student observation sheets and teacher interview sheets. The subject of this study is 14 students in grade V of SD Negeri 2 Penolih. Data collection took place in 2022, following the COVID-19 pandemic, during which learning continued to implement a distance learning approach combined with a limited face-to-face system and home-based education.For observation sheets, they are adjusted to the items in the argumentative skills (Quintana & Correnti, 2019) and decision-making skills (Maulana & Rochintaniawati, 2021). For interviews, the teachers of grade V were carried out. Data collection techniques using Miles and Huberman started with data reduction, data presentation, and a conclusion drawn.

## 3 FINDINGS AND DISCUSSION

The results of observations regarding students' argumentation skills showed that most (60.7%) of students were able to perform evaluation argumentation skills and comprehension argumentation skills. Comprehension argumentation skills were 78.57%. Meanwhile, for evaluation skills by 42.85%. The following is shown in Figure 1 of the results of observation of students' argument skills.

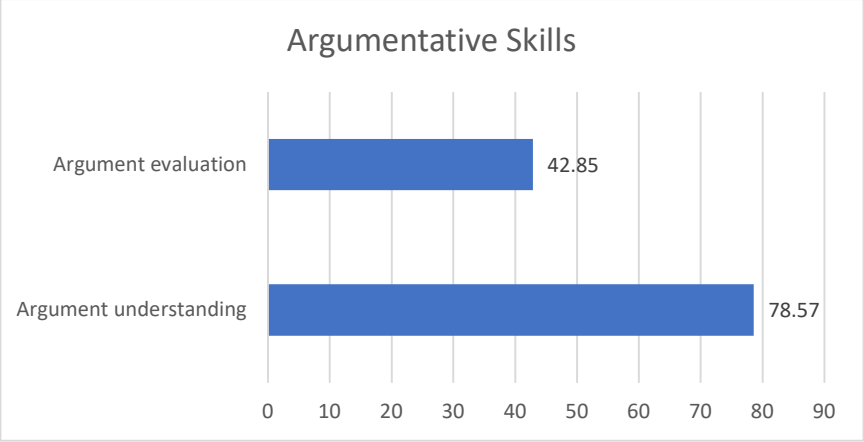


Figure 1. Results of Argumentative Skills

Argument understanding skills are the most basic argument skills and this ability focuses on the ability to understand information and provide opinions or ideas from the information obtained. This ability is also most visible in learning activities using the PBL model. However, the ability to argue evaluation is not so obvious because this ability is related to the ability to assess arguments ideas, or opinions from students themselves or opinions from other students. The results of observation of decision-making skills were known that most (66.06%) had appeared in student learning activities while using the PBL model. The most visible decision-making skill was the skill of making conclusions at 85.7%. This skill is most visible because, in the PBL model syntax, there are activities to analyze and evaluate the problem-solving process and this activity includes concluding activities. Broadly speaking, the observation results of this decision-making skill are shown in Figure 2

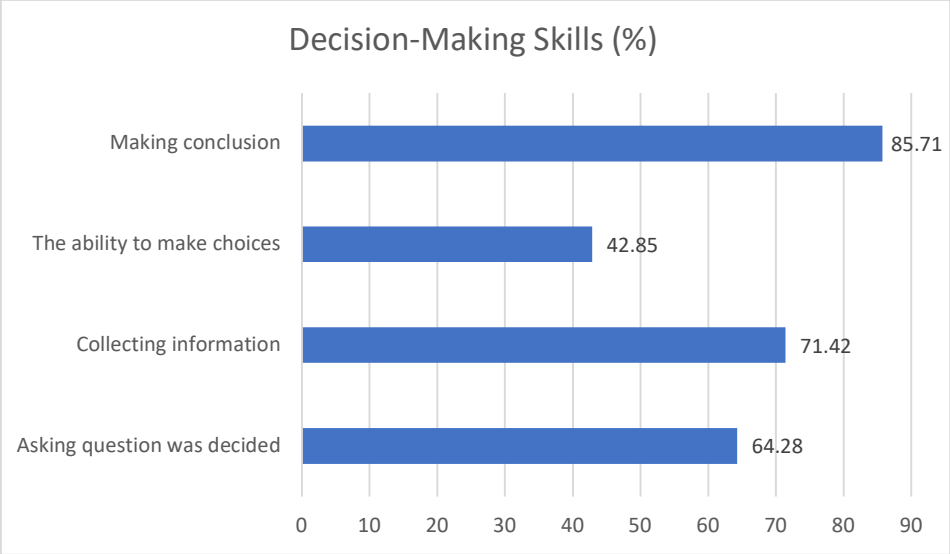


Figure 2. Results of Decision-Making Skills

Figure 2 shows that the lowest decision-making skill is the ability to make choices, which is 42.85%. The results of these observations show that few options facilitate the discussion of the PBL model. Meanwhile, for the indicators of other skills, namely collecting information at 71.42% and the skill of asking questions was decided at 64.28%. These two skills are mostly visible because they are facilitated in the PBL model syntax.

The results of interviews with teachers found that students found it easier to express opinions during group discussion activities and presentations because they had to communicate the results of their discussions. Furthermore, the teacher said that most students were able to show comprehension argumentation skills because this skill emphasized more on students'

understanding of the material presented. On the other hand, for evaluation argumentation skills, according to teachers, only some students can apply them. According to the teacher, this evaluation argumentation skill requires students can evaluate the opinions that have been conveyed by themselves and the opinions of other students. Meanwhile, some students still find it difficult to evaluate their own opinions or arguments. This difficulty may be caused by the development of students in elementary schools who are still at the cognitive level in concrete operations so that the options offered are also adjusted to the student's abilities.

Furthermore, based on the results of interviews with teachers regarding decision-making skills, it was explained that most students were able to show decision-making skills. The teacher explained that students were able to conclude together with their group mates during the discussion activity and after the group presentation activity. The teacher added that students are more independent in gathering information and asking questions about what to complete. However, students tend to still have difficulty making choices because the PBL learning model carried out by teachers has not provided many alternative options for solving problems.

The results of the study prove that the problem-based learning model can improve argumentation and problem-solving skills because this model trains scientific reasoning skills through self-evaluation of their projects, efforts, motivations, interests, and productivity levels (Wulandari & Shofiyah, 2018). In solving problems, students are taught to be independent by being trained to look for information to form quality arguments (constructivism) (constructivism) (Dewi et al., 2023). PBL also provides space for students to seek knowledge and information to solve problems, thus allowing them to learn and acquire problem-solving skills (Thabet et al., 2017). PBL helps students build concepts so that students will be more skilled in making arguments from the meaning of concepts carried out through experiments and demonstrations (Kaniawati & Suhandi, 2014).

To improve argumentative skills, it is important to create interesting and conducive science learning, where ideas can be presented openly without fear of mistakes (Probosari et al., 2017). Another reason why the PBL model can improve argumentation skills is that the PBL model can facilitate investigations where scientific arguments can be honed by submitting hypothesis data that must be proven to produce truth (Nababan et al., 2019). In addition, argumentation skills can be developed with a series of inquiry or problem-solving activities that encourage students to convey their ideas or ideas openly to produce truth.

The PBL model can develop decision-making skills because these skills can be created through realistic problem situations where students are directed to follow the decision-making steps and evaluate the results of their decisions (Sever & Ersoy, 2019). Students can identify the right assumptions, assess the effectiveness of solutions, and justify the process through the evaluation of evidence sources and timely selection of actions (Rahman, 2019). One of the advantages of the Problem-Based Learning model is that it develops the ability to think about important issues that are contextual and trains students to become independent individuals (Pratiwi et al., 2019). The findings of this study also answer questions about the implementation of distance learning using a problem-based learning model. Where the problem-based learning model is proven to be able to be applied to distance learning and improve argumentation and decision-making skills. This learning model is especially well-suited for distance learning programs that focus on acquiring and developing subject-specific knowledge and management skills (Poon et al., 1997). Problem-Based Learning focuses on problem-solving, active engagement, and collaborative learning to enhance learning abilities such as independent learning skills, which are intended to be implemented in the distance learning (Said & Syarif, 2016). Thus, the PBL learning model can be used by teachers to encourage students to be active and independent in distance learning and be able to make decisions based on the learning activities that have been carried out.

## 4 CONCLUSION

The results prove that the PBL model can improve argumentation skills and decision-making skills in science learning in the distance learning scheme. The most visible argumentation skill is the argumentation understanding skill. Meanwhile, the most visible decision-making skills are decision-making skills to make conclusions compared to other decision-making indicators. The results of this study can be used as a reference for future research, especially for large-scale research on the use of PBL models in distance learning on argumentation skills and decision-making skills in elementary school students.

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