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A Profile of Social Skills of Students in Learning Physics through Problem-Posing Approach

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Abstract

This article describes senior high school students' social skills in learning physics by applying the problem-posing approach. This study conducted by implementing a pre-experimental method of the One-Shot Case Study. The samples of this study were 38 students from XII Science class who chosen from a population of 240 students at grade X, XI, and XII at one of the senior high schools in Tapanuli Selatan. The data of students' social skills collected through observation sheets of social skills with five aspects of indicators, namely being consistent with doing tasks, encouraging participation, taking turns and sharing tasks, listening actively, and asking questions. The data analyzed by calculating the average score of students social from each indicator. The score of each indicator of the students' social skills was varied for every meeting, ranging from very high, high, moderate, low to very low, and so was the number of students for each criterion of social skills on each meeting. The results concluded that the profile of social skills in learning physics through a problem-posing approach revealed various levels of mastery of the students' social skills. The variety could be observed from the ability of social skills on each indicator and the number of students for each criterion of social skills in each meeting.

Keywords: Learning physics; problem-posing approach; social skills

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INTRODUCTION

Knowledge of Natural Science, especially physics, is a bridge to interact and seek and find common characteristics of various phenomena that occurred in nature. Learning physics can train and build scientific attitudes such as thinking carefully, quickly, creatively, and disciplined. This is in line with the 2013 curriculum, which requires the study of physics to develop knowledge and skills (Kemendikbud,

2016) simultaneously. It is also supported by the requirement of physics subject competencies at senior high schools, which covers the competence of knowledge, social and spiritual attitudes, and procedural skills (Fauziah, Purnomo, Fathonah, & Khusaini, 2018). Further explanation stated in the Physics syllabus for senior high school, which emphasizes student-centered learning. This means that students play an important and a more active role in learning activities to build various knowledge and skills, not to be passive and only limited to memorizing knowledge (Fitriani, Widiyatmoko, & Khusniati, 2016). Students should also be able to effectively communicate information, ideas, analysis, and arguments to others through various media (Hardianti, Taufiq, & Pamelasari, 2017).

Social skills become some of the essential skills students possess because they are crucial and required in the students' success in the future (Azhari, Zainuddin, & Hartini, 2019; Jannah, Zainuddin, & Mastuang, 2016; Nurjana, 2015). Through social skills, students can improve the group's interaction during the learning process in the classroom so that they can increase their sense of responsibility (Kim, 2020). Furthermore, social skills will support the success of social relationships, allow individuals to collaborate effectively with others, overcome high-level problems correctly, and increase students' understanding of the topics being taught (Arends, 2008; Subali, Kumaidi, Aminah, & Sumintono, 2019). Students who have a good mastery of social skills are characterized by one of which is the existence of good cooperation and interaction among students both in individual and group learning; hence, students' involvement in learning can be maximized (Lestari & Linuwih, 2012).

According to Gresham and Elliott, social skills consist of five aspects. They are (a) Cooperation; listening to other people's talk, asking permission before using other's belongings, preventing the behavior that causes problems, doing chores on time, maintaining cleanliness and tidiness, taking advantage of free time, following directions and instructions, using the right tone of voice, ignoring distractions, and helping the household chores, (b) Assertion; making friends easily, asking for help when needed, being confident in interactions, participating in several activities, giving and receiving praise, starting a conversation, inviting others to participate in an activity, volunteering to help, expressing feelings correctly, and defending friends who are not treated well, (c) Responsibility; saying good things, showing concern for friends, expressing feelings appropriately, following directions and rules, waiting for their turn in an activity, asking permission when leaving, reporting something appropriately, being liked by others / social acceptance, answering the phone correctly, (d) empathy; understanding the feelings of others, asking for help, feeling sorry for the bad things that happen to others, listening to friends who tell stories about the problem, smiling, telling when someone is doing good, defending friends who do not get fair treatment, and discussing an issue or opinions with classmates, (e) Self-control; ignoring temptations or distractions, stating disagreement with no anger, avoiding things that cause problems, doing something right, compromising with other people's opinions, accepting punishment from adults, controlling emotions, accepting criticism without anger, responding

appropriately to behavior others, reject something politely, and speaking in the right tone (Diahwati, H., & Hanurawan, 2016).

Based on a preliminary study through direct observation of physics learning activities conducted at one of the senior high schools in South Tapanuli, it was found that students' activeness and interaction during learning activities were still low. Only 8% of a total of 38 students were able to ask questions when the teacher allowed them to ask questions related to the subject they studied. Also, only about 40% of students actively listened to the teacher's explanation. Similarly, during learning in groups, only 53% of the students involved in working on group assignments while the rest were passive; they were even busy with their work without paying attention to their group assignments. The low participation of the students during learning activities was related to several indicators of social skills. They were caused by several factors, including the learning method, which was dominant to the teacher, so students were accustomed to being passive in every learning activity. Besides, group work and assignments were often done by students who were considered to have better ability in the group; there was no proportional distribution of the tasks for each group member.

Finally, the economic factors also became the factor, in which most students worked to help parents outside school hours. These data were revealed after interviewing with the physics teacher at the end of the observation. This confirms that the learning activities have not run optimally, especially in achieving the student-centered learning. This paradigm places students as the learning subject while teachers are facilitators and motivators, not the primary source of the learning process (Fatimah, Kartika, & Niyartama, 2012). Besides, the students' passiveness during learning activities, if left unchecked, will adversely affect students' achievement and communication skills (Nisa, Wati, & Hartini, 2015). This condition will undoubtedly have an impact on the students' social skills, which are not developed as expected.

The preliminary study results show that the students' social skills in learning physics are still relatively low. Thus, selecting appropriate learning methods is expected to improve various aspects of the students' abilities and competencies. One solution to overcome these problems is applying the problem-posing approach in the learning process. Problem posing has an essential role in the development of creativity and communication skills through the formulation of questions raised by students (Erdik, 2019). In problem-posing learning, the learning process can be carried out cooperatively to establish social interaction. Thus, it enables students to share their knowledge and strategies through cooperation, communication, work together to discuss, explore, solve a problem, create a project or presentation, and debate (Asfar & Nur, 2018; Hossain, Tarmizi, & Ayub, 2012). In the cooperative learning model, the students are demanded to work in small heterogeneous groups to solve problems. The group's success is very important to avoid inequality between smart students and weak students related to the ability of learning skills (Arikunto, 2013).

Problem posing is an approach that can stimulate students 'activities and thinking skills and familiarize them in expressing their ideas to find solutions to problems. Besides, this approach can

also increase students' interest and positive attitudes towards learning science, especially physics (Rahman, Hartini, & Annur, 2015; Safputri, Zainuddin, & Mastuang, 2016). Problem posing emphasizes the activity of formulating questions based on the problems, interacting, discussing, and presenting questions that have been made (Rufaida & Sujiono, 2013). When students can raise questions about the subject, it shows that they are doing a thinking process and making learning more meaningful and enjoyable (Pramudiyanti, Susilo, Hastuti, & Lestari, 2019; Rosli, Goldsby, Onwuegbuzie, Capraro, Capraro, & Gonzalez et al., 2020).

This study aimed to describe the mastery of students' social skills through problem posing learning approach at one of the senior high schools in South Tapanuli. Previous research related to this research included Hodiyanto & Haryadi (2018) about the effect of problem posing on students' mathematical communication skills. This study's results reveal that the problem-posing learning model with a realistic approach has a significant impact on students' mathematical communication skills. Therefore, this study focused on exploring information related to the students' overall social skills profile through the implementation of problem posing in physics learning at senior high schools.

METHOD

This study conducted at one of the senior high schools in South Tapanuli from February to March 2019. The samples of this study were 38 students from XII Science class who chosen from a population of 240 students at grade X, XI, and XII at one of the senior high schools in Tapanuli Selatan. The samples determined by slovin formula (Masfufah, Annur, & Mahardika, 2015), and they were chosen by purposive sampling with e = 0,15 since the size of the population was small. This study's method was pre-experimental of the One-Shot Case Study because it only involved one group or class given the treatment and observed in the learning process (Creswell, 2013).

In this study, data on students' social skills obtained through the observation of three meetings through the implementation of a problem-posing approach in learning physics. An observation sheet was utilized as an instrument to collect the data of students' social skills, which has five indicators. These five indicators include consistency in the task, encouraging participation, taking turns and sharing work, listening actively, and raising questions. In this study, social skills refer to Gresham and Elliott's opinions, consisting of five aspects that include several indicators in each element (Diahwati et al., 2016).

The following formula calculated the average score of students' social skills on each aspect:

$$N = \frac{n}{m} x100$$

Note:

N = the score of social skills on each indicator

n = number of samples demonstrated social skills on each indicator

m = total number of samples

The students' social skills scores obtained by each indicator are then given criteria, which refer to the opinion of Arikunto (2013). Criteria for students' social skills can be seen in Table 1.

Table 1 The categories of students' social skills

Score	Category
80-100	Very High (VH)
66-79	High (H)
56-65	Moderate (M)
40-55	Low (L)
<40	Very Low (VL)

Meanwhile, the score of students' social skills on each meeting was determined based on the total number of social skills indicator appeared at each meeting with the criteria of very high (5), high (4), moderate (3), low (2) and very low (<2).

RESULT AND DISCUSSION

The results of this study were displayed in the form of a description of students' social skills through problem posing approach in physics learning for three meeting. The observation was also conducted during the meeting. Data about social skills obtained in this study are shown in Table 2.

Table 2 Descriptions of social skills score

No	Indicators	Meeting I	Meeting II	Meeting III
1	Consistency to do the task	70.0 (H)	73.7 (H)	81.6 (VH)
2	Encouraging participation	28.9 (VL)	36.8 (VL)	52.6 (L)
3	Taking turns and sharing works	89.5 (VH)	94.7 (VH)	92.0 (VH)
4	Listening actively	57.8 (M)	52.6 (M)	71.0 (H)
5	Asking questions	13.2 (VL)	15.8 (VL)	42.1 (L)

Table 2 shows that the social skills of students for each indicator at each meeting showed different results during the implementation of the problem-posing approach. For example, the indicator "consistency to perform tasks" at each meeting scores increased from high criteria to very high. Likewise, students' social skills scores for the indicator "encouraging participation and asking questions" increase at each meeting, from very low criteria to low. Then, for the indicator of "taking turns and sharing work," the score increases with each meeting and is at a very high criterion. While the indicator of "active listening" shows an increase in score from moderate to high. The frequency of students' social skills through the application of the problem-positioning approach in learning at each meeting explained in Figure 1.

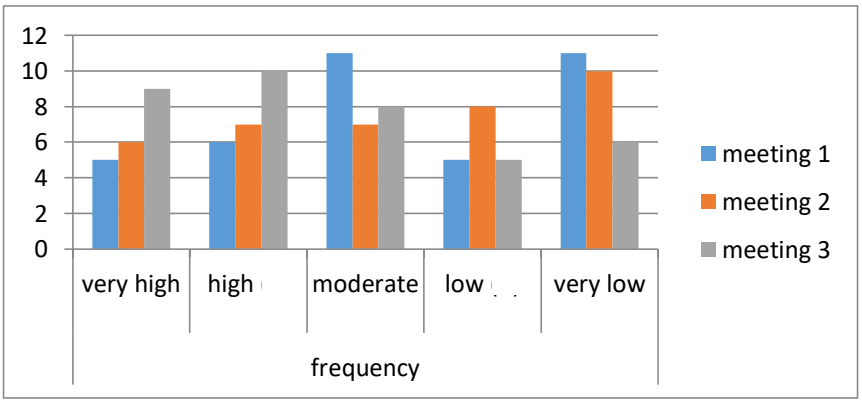

Figure 1 The Frequency of Students' Social Skills at each Meeting

Figure 1 illustrates the frequency of students' social skills at each meeting for the criteria of Very High, High, Moderate, Low, and Very Low. For example, there is an increase for Very High criteria, which means that the five indicators of students' social skills found at each meeting, and the number of students consistently increases, ranging from 5 to 9 students at each meeting. Then, for High criterion, the figure also shows four of five indicators of social skills found at each meeting and the number of students consistently ranging from 6 to 10 students at each meeting. Whereas, the result for Moderate and Low criteria reveals that there are three (for Moderate) and two (for Low) of five indicators found at each meeting. Furthermore, for Moderate criterion, there are 11 students at meeting 1, decreased to 7 students at meeting 2, and 8 students at meeting three while for Low criterion, there are five students at meeting 1, increased to 8 students at meeting two and dropped to 5 students at meeting 3. After that, for Very Low criterion, there is only one, even no, social skills indicator found at each meeting. Based on Figure 1, it can be seen that the number of students was consistently declined at each meeting, starting at meeting 1 for 11 students, becoming ten students at meeting 2, and coming to 6 students at meeting 3.

Overall, there is an increase in students' social skills through the problem-posing approach both in each social skills indicator and each meeting. This is because a problem-posing approach requires students to be actively involved in teaching and learning activities. As a result, they can accommodate students in developing their social skills through these learning activities (Astra, Umiatin, & Jannah, 2012). The problem-posing approach also requires students to ask simpler questions referring to solving the problem (Hodiyanto & Haryadi, 2018). This enables the students to convey ideas related to learning topics through the delivery or submission of various questions as well as formulating problems or simpler questions to solve more complex problems. Based on the results, it can be concluded that the problem-posing approach will stimulate the students' activeness and creativity to participate in the learning process. Later on, it can lead to and develop various kinds of students' social skills. This statement supported by the results of previous research finding that the posing problem can improve students' social skills and characters, such as to think creatively, critically, logically, to work conscientiously, to be effective and to behave politely, to cooperate, and to respect each other (Astra et al., 2012).

Moreover, research conducted by Haji (2011) revealed that the students' activities and learning outcomes after the implementation problem-posing approach improved more significantly compared to traditional or conventional learning. Learning by using the problem-posing approach indicates that learning activities occur dynamically and actively through multi-directional interaction between the teacher and students and between students and students. Other research results reveal that students' social skills after the implementation of problem-based learning are better than those of conventional learning in which aspects of social skills can develop better through active communication in their groups (Minarni, 2013).

However, there are also some indicators of social skills that decline both for the score and the criteria, such

as taking turns and sharing work and listening actively. Besides, there is also an indicator that shows very low criteria, although the score increases at each meeting. It happens on the indicator of raising questions. Based on the results of interviews with physics teachers and several students, it was found that these social skills indicators were not accustomed to being applied or practiced in physics learning activities. To date, learning activities tend to be teacher-centered through lecturing methods and individual assignments. This means that students are passive in listening during the learning process, and there is less interaction between students and teachers or among the students. Therefore, it is essential to realize, especially by the teacher, that learning activities carried out should be able to facilitate students in developing various skills, including social skills.

Nevertheless, this study has some weaknesses. Firstly, since it was a case study and the samples were selected by purposive sampling, not by random sampling, it resulted in the generalization of research results, which had limited scope at one school where the research conducted. Then, the results of this study were limited to describing students' social skills during the learning activities taking place without further investigation about their effects on students' abilities such as cognitive learning outcomes, critical thinking skills, and so forth. Thus, further research can be carried out to support the result of this research.

Lastly, the improvement and mastery of social skills are becoming urgent since they will affect students' success and characteristics to socialize with their environment. This is supported by Willingham's opinion (Mustofa & Tuharto, 2018), stating that the skills in the 21st century will determine students' success, including critical thinking, creativity, collaboration, and communication. Based on 21st-century skills, there are social skills in communication and collaboration.

CONCLUSION

The profile of students' social skills in physics learning through the problem-posing approach demonstrated various levels of mastery of students' social skills both from the ability at each indicator and the number of students for each criterion of social skills at each meeting. The indicator of being consistent with doing the task increased each meeting with the criteria of High (meeting 1), High (meeting 2), and Very High (meeting 3). It also occurred for indicators of encouraging participation and asking questions in which the score increased at each meeting, although with different criteria, namely Very Low (meeting 1), Very Low (meeting 2), and Low (meeting 3). Meanwhile, indicators of taking turns and sharing work and active listening show unstable scores. For example, the criterion for the indicator of taking turns and sharing work is similar (Very High). However, the score decreased at meeting 2 compared to meeting 1 and increased at meeting 3. On the other hand, the scores and criteria for the indicator of active listening were different for each meeting, namely 57.8 (Moderate) at meeting 1, 52.6 (Low) at meeting 2, and 71 (High) at meeting 3.

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