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Readiness of Junior High School Students to Follow Natural Science Learning by Using Cooperative Learning Model

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Abstract – The implementation of education in schools that involve educators is one of the determinants of the success of education through its performance at the institutional and instructional levels. This study aims to determine the readiness of the students of SMP Negeri 2 Maros in learning natural sciences using the cooperative learning model. The design used in this study was a qualitative case study. The selection of cases in this study was based on the consideration of educators on the grounds that there were 6 students of class VIII H who had good potential and achievements. The data were collected through observation, depth interviews, and documentation. The results showed that there was only one out of six students who was declared unprepared in cooperative learning. That student does not meet the criteria or indicators of cooperative learning with the information that students prefer to study alone in a calm and not crowded atmosphere. The rest, they are ready to take part in cooperative learning that requires cooperation with one another. Based on the results of the study, it can be concluded that the majority of students in class VIII H of SMP Negeri 2 Maros stated that they were ready to take part in learning with a cooperative learning model in the subjects of natural sciences.

Keywords: cooperative learning; readiness of learning; science learning

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I. INTRODUCTION

Every educational institution on behalf of a pilot school or excellent school must be recognized by the government and the community, not only by the institution or school itself. Because the superior status of a school has more meaning and value than other schools and of course that value can not only be seen from one side, for example, the physical aspect, but also in other very

decisive aspects. The same is the case with SMP Negeri 2 Maros as a worthy school and deserves to be imitated by other schools (Wasis & Irianto, 2008). Various ways have been done by educators so that science subjects can be interesting subjects for all students. One of the ways to do this is to apply the cooperative learning model by forming small groups. According to Zulaikha et al (2014), study groups aim to

work together, help each other and work together between one student and another.

Cooperative learning is a learning model that generally focuses on cooperation between students as a process to achieve learning objectives (Zulhartati, 2011; Suhartini et al., 2015). In cooperative learning, teams or groups consist of students with various backgrounds, skills, characters, and traits. Each student in the group must know cooperative skills, in order to solve problems to apply knowledge and achieve learning objectives (Kementerian Pendidikan dan Kebudayaan, 2007). In addition, one of the main aspects of cooperating is the desire to help and be helped to achieve common goals.

The cooperative learning model when viewed from local aspects in Maros Regency such as working together, deliberation, and providing opportunities for children to provide input is one aspect of good cooperation and is based on the philosophy of "homo homini socius" which emphasizes that Humans are social creatures (Lie, 2008).

The position of educators as professionals has a role as a facilitator, motivator, and giver of inspiration for students. This role requires educators to be able to improve performance. However, along with changes and demands, it is not only educators who are required to be professional but it is students who need to be developed and prepared for their potential in order to know the aspirations and demands of students (Basri & Akhmad, 2018).

Cases in the field so far have shown that the cooperative learning model and the readiness of students to take lessons in class are very good based on various research results, while the results of initial observations in the field and direct discussions with teachers of natural sciences state that there are 6 students who can do cooperative learning in class well. This was stated by the educator on the grounds that during the learning process the six students always showed good cooperation. In addition, according to the educators, the six people have better achievements than other students in science subjects.

Based on the educator's statement above, the question that can be asked is whether it is true that the six students have cooperative readiness? This is quite reasonable because to be able to carry out learning using a learning model including a cooperative learning model, it is not only supported by professional educators in its implementation, but also must be supported by the readiness of students to cooperate. So to obtain answers to these questions, a more in-depth study related to the cooperative readiness of the six students can be carried out. Thus, the results of the above observations have become an interesting case for the author to clarify the readiness of students to cooperate.

Natural Sciences is one of the subjects that develop inductive and deductive analytical thinking skills in solving problems related to surrounding natural events

(Wasis & Irianto, 2008). According to Sri Sulistyorini and Supartono in (Khusniati, 2012; Munawarah et al., 2018) stated that the concept of education in science learning, namely the approach or learning method must provide the possibility that students can show full activity in learning (active learning). In addition, the educational process created from a method must create a pleasant atmosphere for students so that students can learn comfortably and happily joyful learning.

The science learning process that combines various concepts of physics, chemistry, biology, and earth and space has more potential to develop the experience and competence of students to understand the natural surroundings (Hasanah & Mitarlis, 2016). Experiences to act through comprehensive scientific inquiry activities will help students to gain a deeper understanding. Learning experiences that can be developed include designing and creating work through the application of science concepts in its integration which is colored by scientific methods, scientific attitudes, and scientific communication (Munawaroh et al., 2012). The ability to think, work, and behave scientifically and communicate scientifically is an important aspect of life skills (Wasis & Irianto, 2008; Syam, 2017) In planning integrated science learning, the object that will be developed into a theme or project will be the focus of the study using various physics concepts, chemistry, biology, and space earth.

Learning is said to be effective if the learning is able to provide or add new information or knowledge for students (Khusniati, 2012). While efficient learning is learning that is fun, exciting and able to provide motivation for students to learn. Teachers and the learning process are two things that have a very close and absolute relationship. This means that the teacher will have more educative meaning if the teacher is able to carry out the learning process well, precisely, accurately, and relevant to the functions and objectives of education (Hambali, 2016; Said et al., 2015). In the learning process, several obstacles are often found that hinder the achievement of the learning objectives themselves. Problems in learning seen from the realm of education are often defined as a gap between expectations (aspired) and reality (generated).

Cooperative learning is a broader concept encompassing all types of group work including forms that are more teacher-led or teacher-directed. In general, cooperative learning is considered more teacher-directed, in which the teacher assigns tasks and questions and provides materials and information designed to help students solve the problem in question. The teacher usually assigns a certain form of an exam at the end of the assignment.

Cooperative learning is a series of learning activities carried out by students in certain groups to achieve the learning objectives that have been formulated.

The students are divided into small groups and directed to study the material that has been determined. In addition, cooperative learning is to improve students so that they have an orientation to work in teams. Students not only learn the material but must learn special skills called cooperative skills (Lie, 2008). Cooperative learning is a learning model in which a number of students are members of small groups with different ability levels. In completing their group assignments, each group member must work together and help each other to understand the material being studied, learning is said to be incomplete if one of the friends in the group has not mastered the lesson material.

Cooperative means working together in achieving common goals (Hambali, 2016; Akib, 2016). In cooperative activities, students individually seek results that are beneficial to all members of the group. So, cooperative learning is the use of small groups in teaching that allows students to work together to maximize the learning of other members of the group.

Cooperative learning is a learning model which means that students learn and work in small groups collaboratively whose members consist of 4 to 6 people, with a heterogeneous group structure. mutual cooperation learning model in education is philosophy statement (Lie, 2008).

The basic principles of cooperative learning are as follows:

1. Learners in groups must assume that they live together in the same direction;
2. Learners are responsible for everything in the group;
3. Learners must see that all members in the group have the same goal;
4. Learners must divide the same duties and responsibilities among group members;
5. Students will be subject to evaluation or given awards which will also be imposed on all group members;
6. Learners share leadership and they need skills to learn together during the learning process;
7. Students will be asked to individually account for the material handled in a cooperative group.

From the statement above, it can be concluded that cooperative learning is a series of learning activities carried out by students in the form of using small groups in teaching that allows students to work together to maximize the learning of other members in the group through group learning, students get the opportunity to interact with each other with his friends. From the description above, the group learning model is very suitable for practical learning.

Cooperative learning will be carried out well if students have cooperative skills (Mulyani, 2013), which must be in the cooperative learning model, namely:

- a. *Forming*, namely the skills needed to form groups and form attitudes that are in accordance with normal.
- b. *Function* (setting), namely the skills needed to organize group activities in completing tasks and fostering cooperative relationships among group members.
- c. *Formating* (formulation), namely the skills needed to form a deeper understanding of the material being studied, stimulates the use of higher levels of thinking, and emphasizes mastery and understanding of the material provided.
- d. *Fermenting* (absorption) is a skill needed to stimulate understanding of concepts before learning, cognitive conflict, seeking more information, and communicating thoughts to get conclusions.

The reasons why cooperative learning is recommended to be used in the learning process are:

- 1) Several research results prove that the use of cooperative learning can improve student learning achievement as well as improve social relationship skills. Cultivate an attitude of accepting the shortcomings of self and others, and can increase self-esteem.
- 2) Cooperative learning can realize the needs of students in learning to think, prevent problems, and interact with knowledge and skills, so cooperative learning can improve learning systems that have had weaknesses.

Every individual has different learning abilities. The initial ability of students is the ability that has been possessed by students before participating in the learning that will be given. This initial ability describes the readiness of students to accept the lessons that will be delivered by the teacher. Readiness literally means two values. The first is consent to do something voluntarily and consciously of the decision directed to the activity; the second as a description of the situation where everything that has been improved for something that will be implemented from the decision.

Readiness is an emotional, intellectual and social state. In this situation, the child feels good and is able to accept new learning assignments. His readiness states that he is "mature", has mastered what is needed to accept new learning assignments or experiences. In other words, he was already good, having already mastered the level of learning required to receive the next level. This readiness is an important requirement for the smooth running of the learning process. According to, readiness is the overall condition of a person who makes him ready to respond or answer in a certain way to a situation. Adjustment of conditions at some point will have an effect or tendency to respond.

From the various opinions on the readiness of students to take part in cooperative learning above, the researcher can

conclude that the initial stage is to see the condition of students who will take part in a learning process not only from one side but also from various aspects including physical, psychological and material readiness must be considered carefully and with great care. Therefore, this study aims to determine the readiness of students of SMP Negeri 2 Maros in learning science using the cooperative learning model.

II. METHODS

The type of research carried out is a qualitative research type of case study with the aim of clarifying the readiness of students to cooperate (Sugiyono, 2014).

The location of the research was carried out at SMP Negeri 2 Maros. The determination of this location is based on the number of cooperative learning models that have been stated to have been applied by educators (*purposive*) in science learning.

The targets in this study were 6 students who were declared potential in cooperating in science learning. This target is set based on the consideration of educators (*purposive*).

To measure the readiness of students, the instrument used in data collection is the researcher himself through observation, in-depth interviews, and documentation (Sugiyono, 2014). With the steps taken in this research, namely:

a. Case selection

The case in this study was selected based on the educator's consideration

(*purposive*) on the grounds that the educator stated that there were 6 students who had good potential and achievements in cooperating in science learning.

b. Data collection

The data in this study were collected through observation, in-depth interviews, and documentation.

The data that has been collected in this study are then analyzed with the following analysis stages that's is:

- 1) Data Transcript. All data collected in the form of observations, interviews and documentation were recorded in full in the form of transcripts as raw data in this study.
- 2) Data Reduction. All transcripts that have been prepared are then performed data reduction by classifying primary data and secondary data. As well as leaving aside the data that are considered less supportive in this study.
- 3) Presentation of Data. The data in this study are presented in the form of table readiness and member check results.
- 4) Data Interpretation. Based on the data presented, the writer interprets the statement whether the students are ready or not.
- 5) Data Capability. To clarify the data that has been interpreted, then a member check is carried out to several peers of the subject of students in this study. The intended partner is a close friend of the student's subject both inside and outside

the classroom. Apart from that, the validity of the data was also carried out through FGD regarding the research results obtained.

III. RESULTS AND DISCUSSION

From the results of observations and research results, the readiness data of 6 students of SMP Negeri 2 Maros. There are 1 in 6 people who are categorized as not ready to cooperate after being checked for validity, it is presented in the following table form:

Table 1. The readiness of 6 students in participating in science learning using cooperative learning models.

No.	Students	Cooperative Readiness
1.	A	Not ready
2.	B	Ready
3.	C	Ready
4.	D	Ready
5.	E	Ready
6.	F	Ready

Based on table 1 shows the results of research conducted by in-depth interviews and check by several other students but still in one class of research objects. Student A was categorized as "not ready" to cooperate because the results of the interview indicated that these students preferred to study alone compared to group learning. Meanwhile, student B is "ready" to cooperate with science subjects according to the results of direct interviews that are ready to cooperate and tend to help and be assisted. Likewise, student C is said to be "ready" because they have a tendency to prefer group learning. In D students are also "ready" to cooperate with

their friends in the class. Student E is also included in the category of "ready" to learn cooperatively with science subjects. The last student (F) is in the category of "ready" to do cooperative learning with the theme in the science subject.

This research is a form of case study research regarding the readiness of 6 students who are said to be ready for cooperative learning. In the following section, excerpts of the interview script with respondent A with code A are shown.

- R : Can you tell me what subject do you like in class?
 A : Science, cultural arts, mathematics
 R : Do you like learning science?
 A : Yes.
 R : Do you usually study science in a group? Or do you tend to study alone?
 A : I like study alone.
 R : Self-study?
 A : Yes
 R : Why do you like to study alone?
 A : Because if we usually study in a group, it's noisier there. . . it is difficult to understand the subject if it is noisy.
 R : So, do you think self-study is better?
 A : Yes. I think so.

In the first student, it is true in his statement that he likes to study science. However, after being asked further it turns out that he does not like group study for various reasons that group learning in class is usually noisy so lessons are not included or in group learning other students are rarely serious in learning, so the first students do not fit into the category of ready to cooperate.

That someone is said to be ready to cooperate or cooperate if the student is able to give good ideas and suggestions to the group so that the achievement of common goals in

cooperative is not only that but also able to receive input from friends. In the following section, excerpts of the interview script with respondent B with code B are shown.

- R : What subjects do you like in the class?
 B : I like sports lessons.
 R : what else?
 B : I like also English, science. . .
 R : Do you like to learn science?
 B : Yes, I like.
 R : ... usually when you study science in the class, do you like studying alone or studying in groups?
 B : I prefer to study in a group work.
 R : Why do you like group work?
 B : Because we can work together. Yes. I think it's better if we work together.
 R : OK. When you work together, do you usually help the friend or are you the one being helped?
 B : I usually help but if I don't know either, I'm the one being helped.
 R : OK. This means that helping and being helped are commonplace in cooperative learning. Right?
 B : Yes
 R : Thank you very much.

In the second student (respondent B) according to the initial information from the educator that the student was included in the category of ready to cooperate in science learning. The results that have been obtained by the researcher are that it is true that these students like science lessons and like to study in groups in class besides that these second students also tend to help their friends and also like to be assisted by their friends. However, it is not only up to the student's statement that he is indeed ready to cooperate, but the researcher also crosses checks with some of the students' close friends both inside and outside the classroom.

The results obtained were that these students like to study in groups in science subjects because they can calculate and know physics formulas better than us, like to help when the learning process is ongoing and like to ask questions in class. In the following section, excerpts of the interview script with respondent C with code C are shown

- R : Can you tell me your favorite subject?
 C : Science, PPKn, social sciences, and English
 R : Do you like to learn science?
 C : Yes, I like to learn science, especially physics.
 R : Do you like studying science on your own or do you work in groups?
 C : I like in a group work
 R : Do you like group works?
 C : Yes
 R : Why do you like in group work?
 C : Because in group work we can help each other. In group learning we can share with others so that it is faster to find answers to problems given by the teacher.

In the third participant (respondent C) is included in the category of ready to cooperate in science learning based on the results of direct research in the field and the information of the students themselves by approaching students asking directly whether these students really like learning science? in the classroom like to study individually or in groups? and these students tend to help or be assisted? the answer to that can be seen in the attachment.

With the results of members checking from some of the students' close friends that the statement expressed was true that they like to learn science, like to study in groups and often help their friends in group learning. So that the third respondent is categorized as

ready to cooperate. In the following section, excerpts of the interview script with respondent D with code D are shown

- R : What kind of subjects do you like in class?
 D : Science, cultural arts, mathematics.
 R : Do you like learning science?
 D : Yes, I like learning science
 R : When you study science, do you like to study alone or study in a group?
 D : I like to study in a group
 R : Study in a group?
 D : Yes
 R : OK. If you study in groups, do you usually help or be helped?
 D : Both because if we are in a study group, people will help each other.
 R : Many people help each other in the study group. Right?
 D : Yes
 R : Do you usually help in group study?
 D : Yes, sometimes if I also understand.
 R : Ok, thank you.

The fourth student (respondent D) is in the category of ready to cooperate based on research results supported by data and member checks from several other sources, namely the subject's classmates and friends from other classes. The unique thing about this student is because of the justification from fellow students from other classes that he likes to cooperate on the grounds that he likes to be helped in completing his assignments so that it makes it easier for him to learn science.

The fifth research subject is students who can also be categorized as ready to cooperate because some of the data that has been collected, the first from the subject himself, was asked and asked for reasons why he likes learning science, why he likes cooperative learning until the last question with the student's firm voice E) replied that yes, he

likes to study groups with the reason that there are many friends who can be helped and if there are more friends who can be asked for help. In the following section, excerpts of the interview script with respondent E with code E are shown

- R : What are your favorite subjects in class?
 E : Science, English and Mathematics.
 R : Do you like learning science?
 E : Yes, I like it
 R : When you study science, do you like to study alone or study in a group?
 E : I prefer to study in a group
 R : Study in a group?
 E : Yes, with my friends.
 R : Why do you like to study in a group?
 E : Because we can work together. If we are in trouble, in group study there is someone who can help.

The results of the member checks from classmates that it is true that these students (respondent E) like to study in groups, usually helping their friends who are having difficulty doing physics and other calculation tasks. According to the results of interviews with educators, it was also found that these children had high academic scores. community and the environment. In the following section, excerpts of the interview script with respondent F with code F are shown

- R : What subject do you like in class?
 F : Mathematics, religion, and science.
 R : Do you like to learn science?
 F : Yes
 R : If you were studying science, do you like to study alone?
 F : No, I like to study with my friends. . . in a group learning.
 R : Why do you like to study with others?
 F : Because we can help each other. . . For example, if I know something and others don't then I tell them.
 R : So, what do you usually do to help others?

F : I usually explain physics formulas.
 R : If you are helped, what form of assistance usually takes?
 F : Sometimes I am also helped by being told the answer if I am given an assignment
 The last student (respondent F) was also categorized as ready to do science learning by working in groups in class. This is because from the information of students that the group learning has many friends who help complete the task so that it can be completed on time. Member checks from some of his classmates also gave almost the same answer that students (respondent F) like to learn science, like to also be in groups and usually help in explaining lessons and like to be helped in completing assignments.

As with other research objectives in general, basically researchers who use this case study research method aim to understand the research object of students who are declared ready to cooperate in science learning. with the specific aim of explaining and understanding the object under his special research as a case. In this regard, the purpose of using case study research is not only to explain what the object under study is like, but to explain how the case existed and why it happened.

So it can be concluded that of the six students who were said to be ready to cooperate by the educators, it turned out that based on the results of the study there was one who did not like group learning on the grounds that group learning was noisy and lessons could not enter if the atmosphere was not conducive. But it is not an indicator that

these students cannot help their friends, just because they do not like noisy situations. Meanwhile, all five students are included in the category of ready to carry out cooperative learning with science subjects.

According to Baharuddin (Dharmayanti & Munadi, 2014), ways to arouse students' interest in learning include making the material to be studied as interesting as possible and not boring, both in the form of material books, learning designs that free students to explore what is being learned, involving all domains. student learning (cognitive, affective, psychomotor) so that students become active. So that it increases the motivation and interest of students to learn cooperatively.

In this regard, a strategy is needed that can optimally increase the participation of students in transferring knowledge or information that involves students solving problems during cooperative science learning. However, it should also be noted that junior high school-age children are early teenage children who experience a change in attitude which brings a consequence regarding learning methods (Indrastoeti & Mahfud, 2015).

The results of research conducted by Hertavi et al. (2010) showed that the application of the Jigsaw type cooperative learning model was able to improve problem-solving abilities, which was indicated by the increase in students' learning mastery. It can be taken as a bright spot that science learning

using the cooperative learning model is very good and suitable to be applied as one of the effective learning models and can achieve maximum success. This is supported by the results of Ho & Boo's research in (Nurnawati et al., 2012) that the use of cooperative learning can improve students' academic achievement and help achieve a better understanding of physics concepts.

IV. CONCLUSION

Based on the results, it can be concluded that there are only one of six students who are declared not ready to participate in science learning using cooperative learning models. The majority of students who are the subjects of this study like cooperative learning because they can share ideas, provide mutual assistance, and increase interaction between students. The implication of this study for the teacher is if the teachers want to do learning in the classroom, especially the cooperative learning model, they must pay attention to the various readiness of students so that learning can be carried out more effectively and efficiently. For further researchers, especially for cooperative learning models, must understand the theory and skills of cooperative learning from the basic level to the latest level. Honesty and tenacity in research is the key to the success of a study. For science travelers, it is hoped that the results of this research can be used as a material consideration in developing a better

learning model, curriculum, and educational policy in the future.

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