Character of Students in Mathematical Learning Through Discovery Learning Model

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Abstract

This research is a descriptive study that aims to describe the level of student characters in terms of their independence and critical thinking ability in polyhedron topic through the Discovery Learning model. The subjects of the study were 6 students of Year 8 of MTsN 1 Banda Aceh who was selected based on their high ability, moderate ability, and low ability. Data collection techniques in this study were student character observation and interviews. Data is analyzed by reducing data, presenting data and drawing conclusions. The results showed that the attainment of the level of independent character and critical thinking increased during mathematics learning.

Keyword: Student Character, Independent, Critical Thinking, Discovery Learning Model.

Introduction

Building character for today's generation is indeed very urgent. We can see this from the phenomena that occur and the challenges faced are increasingly complex. General characters such as honest, disciplined, obedient rules, or responsible are increasingly lost. As proof, the proliferation of cheating or plagiarism efforts in the educational environment shows a lack of awareness to be honest. Not to mention the anarchic behavior carried out by the young generation of the nation's successors. Their behavior no longer reflects someone who is educated, cultured, and moral. This is a serious problem that must be considered because in their hands the future of this country will continue.

Education in schools plays a very important role in the formation of student character. This is in accordance with the Act. Article 20 states that national education has the function of developing capabilities and forming dignified national character and civilization in order to educate the life of the nation. National education aims to develop the potential of students to become human believers and fear the Almighty God, noble, healthy, knowledgeable, capable, creative, independent and become a democratic and responsible citizen.

McElmeel (Siswono, 2012) provide reasons for developing character education in schools because of the needs of the workforce that require character values such as (1) proactive, namely having initiative in facing challenges and achieving goals, (2) building consensus in determining a goal, (3) having priorities based through deep thoughts, (4) creative thinking, seeking mutually beneficial

solutions and procedures, (5) seeking understanding of problems in order to get success in problem solving, (6) synergy, cooperating with various groups, and (7) visual acuity to encourage continuous improvement.

Lickona (2012), there are seven reasons that character education must be delivered, namely (1) is the best way to ensure students have a good personality in their lives; (2) is a way to improve academic achievement; (3) some students cannot form strong characters for themselves elsewhere; (4) preparing students to respect others and live in diverse societies; (5) departing from the root of problems related to social morality, such as immodesty, dishonesty, violence, violations of sexual activities, and work ethic; (6) is the best preparation towards behavior in the workplace; and (7) teaching cultural values is part of the work of civilization.

Efforts to strengthen the character triggered by the government are realized by developing 18 national cultural kararkter. These characters are (1) Religious, (2) Honest, (3) Tolerance, (4) Discipline, (5) Hard work, (6) Creative, (7) Independent, (8) Democratic, (9) Curiosity, (10) The spirit of togetherness, (11) Love of the homeland, (12) Appreciating achievement, (13) Friendly and communicative, (14) Peaceful love, (15) Loving to read, (16) Environmental care, (17) Social care, (18) Responsibility. Based on the objectives of mathematics learning there are several national character values that can be developed through mathematics lessons including discipline, honesty, hard work, creativity, curiosity, independence, communicative, and responsibility (Zuchdi, 2011). Sumarmo (2011) the main characters in mathematics include logical thinking, critical, hard work, curiosity, independence, confidence and the main character in mathematics include religious, honesty, intelligence, toughness, caring, and democratic. The character of students who want to be developed in this study include independent character and critical thinking.

The independent character and critical thinking that students have, can increase their desire to solve the problems they face. For example, curiosity and independence make students know the truth individually. A person's curiosity and independence character will always look for detailed information about everything needed to solve a problem. Therefore, it takes the efforts of teachers to foster the character of curiosity, independent character, character of democracy, character of critical thinking and the character of creative thinking of students through appropriate learning strategies, including through the application of learning models.

The reality in the field shows that the 2013 curriculum that emphasizes character education has not reached the expected level. So far, the biggest concern is the act of violence committed by young people, and that is already a serious condition that needs to be addressed immediately. Based on a national survey conducted by the Ministry of Health (2015) It is known that student behavior within 12 months, namely: 23% of students experienced in physical fights and 25% of students involved in physical fights in the school environment. Although the percentage is still low. attention still needs to be paid to the social, emotional and physical impacts that might affect students' physical and mental development.

Efforts are needed to develop students' character through classroom learning. The teacher's creative power in carrying out the learning process in the classroom can help students develop their good character and intelligent character so that learning becomes more useful for students. This is in line with opinion Hendriana, Rohaeti, and Sumarmo (2017) states that there are several things that can be done for mathematics learning so that the learning process of mathematics can be meaningful and have a positive impact on students, among others: teacher creativity to deal with the current curriculum, teacher innovation in learning, and linking teaching material to natural events or events

in real life everyday. In addition, the 2013 curriculum also suggests that classroom learning must place students as subjects to build their own knowledge in order to develop students' intuition and creativity.

Discovery Learning learning requires students to learn independently in solving a problem. Mandiri is an attitude or behavior in acting that is not easily dependent on others in solving problems or tasks (Supinah & Parmi, 2011). Independence will forge students into someone who is experienced and accustomed to dealing with and solving problems. Students who have an independent attitude will try to complete their responsibilities themselves without imitating the work of others Knowless (Rusman, 2010), Independent students must have their own creativity and initiative, and be able to work alone by referring to the guidance they obtain. Independent character fosters students' confidence in solving problems they face.

Problems faced by students are not just simple problems, but problems that require high level thinking. Critical thinking students need to be honed to get students to solve problems by giving strong reasons or arguments. Critical thinking is the ability to understand a problem and find solutions to problem solving, and always open the mind to new things to find the best solution in the problems it faces.

Given the importance of character education in the learning process and discovery learning learning model is one of the lessons suggested by the 2013 curriculum in mathematics learning, the author is interested in studying more about the character of students that is applied through discovery learning models so that the character education of these students can improve the quality and effectiveness of mathematics learning at school. Fauzi, Zainuddin, and Atok (2017) has carried out research that shows that the application of discovery learning models to the scientific approach is effective and efficient in fostering a character of curiosity and social care. Other than that, Pertiwi and Marsigit (2017) in his research showed that character education implementation in mathematics teaching and learning of junior high schools in Yogyakarta was good. Based on the description that has been stated, then the formulation of the problem in this paper is how the character level of students during mathematics learning uses the Discovery Learning model?

Method

This study included in the type of qualitative research involving 36 students of class VIII MTsN I Banda Aceh using the Model Discovery Learning for 4 meetings. Of the 36 students selected 6 subjects, namely two high-ability students, two students with moderate ability and two low-ability students. The selection of research subjects is based on the mathematics teacher information that teaches in the class and these students can communicate well for fluency when taking interview data. Data collection techniques used in this study are student character observation, interviews. The student character observation sheet is taken from Asdarina (2016) such as 1) independent, the indicator is the work of people, doing their own tasks which are their responsibility by not imitating / imitating, having self-confidence or confidence in completing assigned tasks, being able to reflect or assess their own answers (individuals) and 2) Critical thinking, the indicators are expose opinions based on facts, provide alternative thoughts on the problems faced, describe new ways or results and the latest from what has been owned. Interviews of six subjects conducted at the end of the lesson to explore more deeply the character of independent and critical thinking of students during the learning process. Then each indicator is assessed in three assessment categories, namely "Never",

"Sometimes", and "Often". Data analysis techniques include data reduction, data presentation and conclusion drawing (Miles & Huberman, 2014)

Results and Discussion

The results of observations of students' independent characters during learning on six subjects can be seen in Table 1.

Table 1. Observation Data Against Independent Character for Four Meeting Times

No.	Student's Name	Meeting 1	Meeting 2	Meeting 3	Meeting 4
1.	Student 1	Enough	Good	Very Good	Good
2.	Student 2	Enough	Good	Enough	Less
3.	Student 3	Enough	Very Good	Good	Very Good
4.	Student 4	Enough	Good	Good	Good
5.	Student 5	Good	Enough	Good	Good
6.	Student 6	Enough	Very Good	Very Good	Very Good

The independent character level of students in the first game of the 6 students observed by the independent character there are 5 students at the level of "Enough" and one student is at the level of "Good". "Enough" level becomes "Good", student 3 and student 6 from "Enough" level to "Very Good". But at the third meeting, there were 3 students who experienced changes in character levels, namely students 1 from the level of "Good" to "Less", students 2 from the level "Good" to "Enough", and students 3 from the level "Very Good" to " Well". At the fourth meeting 3 students experienced a change in level for independent characters, namely student 1 from the level of "Less" to "Good, students 3 from the level" Good "to" Very Good "and for students 2 from the level" Enough "to" Less Well". As a whole, from the first meeting to the fourth meeting, the level of students' independent character has increased.

For independent characters, students are encouraged to be able to work alone without having to imitate the work of friends / others. although in practice there are still many students who mimic the work of their friends, this is because students do not believe in the answers they have made or are afraid of being wrong, then because students do not know what to do in completing the task given, so they decide to just imitate their work . This is because there are still many students who do not understand the material taught.

The results of observations of students' critical thinking characters during learning on six subjects can be seen in Table 2.

Table 2. Observation Results Data on Critical Thinking Characters During Four Meeting Times

No.	Student's Name	Meeting 1	Meeting 2	Meeting 3	Meeting 4
1.	Student 1	Less	Less	Less	Less
2.	Student 2	Less	Less	Less	Less
3.	Student 3	Less	Less	Less	Enough
4.	Student 4	Less	Less	Less	Less
5.	Student 5	Less	Less	Less	Less
6.	Student 6	Less	Good	Less	Good

Based on Table 2. character of students in the first sixth meeting students are at the level of "Less". Likewise at the second meeting. Only one student experienced an increase, namely students 6 from the "Less" level to "Good". The third meeting there are six students at the level of "Less". Student 6, changes the level of the "Good" level to "Less". At the fourth meeting there were 2 students experiencing changes, namely students 3 from the "Less" level to "Enough" and students 6 from the "Less" level to "Good". But overall the character of students' critical thinking is still relatively minimal. For the character of critical thinking, students are encouraged to think critically during the learning process, this can be seen from the activities of students who play an active role in the learning process by asking relevant questions related to the material being taught. Students are also given LKS questions that require students to think critically and reason in completing them.

Although the observed character development of students did not increase significantly, but from the first meeting to the fourth meeting, it was seen that overall students experienced changes in character for the better than before. The attitudes and behavior of students emerge during learning according to the indicators of each observed character.

For independent characters, students are encouraged to be able to work alone without having to imitate the work of friends / others. although in practice there are still many students who imitate the work of their friends, this is because students are not confident with the answers they have made or are afraid of being wrong, then because students do not know what to do in completing a given task, so they decide to just copy their friend's work . This is because there are still many students who do not understand the material being taught. Fadillah (2014) stated that the stages of learning that were repeated every time mathematics learning would form the character of students by themselves.

For the character of critical thinking, students are encouraged to think critically during the learning process, this is evident from the activities of students who play an active role in the learning process by asking relevant questions related to the material being taught. Students are also given questions about worksheets that require students to think critically and reason in solving them.

Data on critical thinking skills of students was obtained through tests of critical thinking skills. Critical thinking ability tests are given after students take mathematics learning using the Discovery Learning model. The test questions are arranged by the researcher based on indicators of critical thinking as follows (a) assessing things as a whole, (b) making considerations, (c) the ability to analyze the truth / error of a consideration, (d) able to provide the right reasons for solving a problem. The results of tests of critical thinking skills of most large students are able to solve problems that are accompanied by reasons while a small proportion of students who solve problems that are not accompanied by reasons, and do not provide conclusions from the results obtained. Karim (2015) stated that one of the reasons students could not make conclusions was that when solving problems students made mistakes in calculations so that their conclusions were incorrect.

Based on the discussion of the results of research that has been described, shows that learning mathematics using the Discovery Learning model can foster students' critical thinking skills. The Discovery Learning model requires students to learn character.

Conclusion

The 2013 curriculum which emphasizes student character education. Character education can be integrated in every subject including mathematics, especially in independent character and critical thinking. This research is expected to be one of the solutions for teachers in teaching to improve student character. Not only in independent characters and critical thinking characters, but can be

developd in other characters. Instilling character values to students can be developed abilities, skills, attitudes and personalities that are very beneficial for students.

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