

Description of Student Characters in Science Learning

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Abstract--- *Character education is a deliberate effort to help individuals understand and conduct ethical values. The character of personality-forming learners can be formed through science learning. Learners gain knowledge by understanding natural phenomena and as an impact, they can develop various characters in life skills. The purpose of this research is to describe the student's character through science learning. This research is a quasi-experimental with time-series design. Based on the results it could be concluded that students' characters tend to change from "start appearing" to "start developing" criteria. Based on the results obtained, so as to grow the character of curiosity in science learning, then teachers need to design learning by including the character of curiosity in the learning process.*

Keywords--- *Student Character, Science Learning.*

I. INTRODUCTION

Character building is one of the national education purposes in Indonesia. Article I of the 2003 National Education System Law states that among the objectives of national education is to develop the potential of students to have intelligence, personality, and noble character. The statement indicates that education does not only form the intelligence of Indonesian people but also character. Educational institutions are a place to foster national generations, so it is very appropriate if the nation's character building strategy is carried out through education. Character education plays a role in fostering positive attitudes in students and acting in accordance with cultural values and national character. There are 18 character values developed in character education namely, religious character, honesty, tolerance, hard work, discipline, independent, creative, fond of reading, democracy, national spirit, love of the motherland, curiosity, respect for achievement, friendship/communicative, peace-loving, social care, environmental care, and responsibility [18]. Based on those things, educators in all countries are obliged to help students to develop positive attitudes such as responsibility, perseverance, caring for others, courage, discipline, honesty, justice, respect, integrity and patriotism [13].

Character building is generally taught through religious subjects, Pancasila education and social science, but character can also be taught through other subjects such as natural science. Science learning is a way of learning and understanding the world around [6,9]. Learners feel meaningful experiences when they are able to find knowledge about themselves and the world around them [21]. Science learning in junior high school includes knowledge, skills, and attitudes as well as the ability to think through direct interaction with learning resources that are designed through learning activities in the syllabus and Lesson Plan [11].

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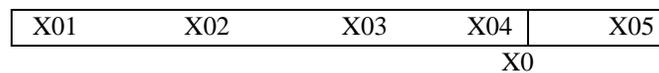
Science learning can be learned by students through thinking activities in discovering facts, concepts, and new knowledge [17]. Science learning also provides opportunities for students to implanting a variety of characters that are useful for their future such as curiosity, creativity, innovation in supporting their future. So that the integration of character education in science learning will greatly help students to face the 21st-century era. Character education is an effort that positively contributes to students in order to make wise decisions and apply them in their daily lives [14]. Natural Science Learning (IPA) is the science that studies events that occur in nature by observing, experimenting, compiling and concluding theories so that students have the knowledge, concepts, and organizing ideas about the natural environment obtained from experience. Science learning has a characteristic element that is unique and inseparable namely the process, attitude, product, application, and creative. The science learning process is directed to the development of all three domains, namely attitudes, knowledge, and skills as a whole.

The results of previous research showing that there are weaknesses in the training of teachers in relation to character education [20]. This weakness will have an impact on the learning process that is teaching of values in education is not optimally yet, so it is necessary to optimize the role of the teacher in teaching character education for students. The teacher has an important role in building student character so students not only learn knowledge but also learn to build their character during learning [16]. The teacher can help students gain knowledge about the character by integrating it into the learning process with an innovative learning model. Learning using innovative learning models in accordance with the demands of the 2013 curriculum, including inquiry learning [11]. This is supported by the results of studies [2,7,19,24]. That the inquiry and guided inquiry models can improve the character of students. Other learning models that can be applied with curriculum 2013 are cooperative learning the Student Team Achievement Divisions (STAD) model. The STAD model is simple cooperative learning and the best way for teachers who are new to use a cooperative approach [23]. Learning with the STAD Model begins by dividing students into a learning team consist of four different people with different levels of ability, gender, and ethnic background. Teachers who use STAD refer to group learning that presents new academic information to students using verbal or text presentations.

This article will discuss the character of students in learning science especially the character of curiosity with the hope that students can gain knowledge about science and grow the character of curiosity, both through guided inquiry learning models and STAD learning models.

II. MATERIALS AND METHODS

The main purpose of this study is to describe the character of students in learning science in Banjarmasin city. The character that will be discussed here is the character of students' curiosity in science learning through the application of guided inquiry learning and STAD type cooperative learning models. This research is quasi-experimental research (Quasi Experimental). According to the design used because, in reality, it is difficult to get the control group used for research [26]. The type of design in this study is time-series design with patterns:



Graph 1: Time Series Design

Note:

X = Treatment (Learning Model is repeated up to 6 times)

O = Measurement (in design, measurement is repeated up to 6 times)

This research was conducted at SMPN 31 Banjarmasin using the Guided Inquiry model and at SMPN 15 Banjarmasin using the STAD model. The sample was chosen purposively by considering the students' UAN score at the school in the same rank. In this study, only data were presented in the form of the frequency of students' character of curiosity seen based on indicators of curiosity that were seen. The instrument used was the curiosity student character observation sheet. Data were analyzed descriptively. The indicators used to measure the character of students' curiosity are as follows: 1) Students listen and pay attention to the teacher's explanation;

1. Students ask the teacher or friend about learning material that is not understood yet;
2. Students participate in working on LKPD with group members;
3. Students look for other references (textbooks/worksheets) related to learning material; 5) Students are eager to work on the questions given by the teacher and find out their own solutions.

The assessment of students' curiosity character in this study refers to the guidelines for scoring²⁸. The scoring category for each indicator can be seen in Table 1.

Table 1: Curiosity Scoring Rubric

The observed aspect	Information	Score
Pay attention to the teacher's explanation in class	Does not show the attitude of paying attention to the teacher's explanation at all	1
	Shows the attitude of paying attention to the teacher's explanation but looks less enthusiastic or only once	2
	Showing attitude of paying attention to teacher's explanation but mediocrity	3
	Showing an attitude of paying attention to the teacher's explanation with enthusiasm	4
Ask the teacher or friend about the subject being discussed or not understood yet	Not asking friends/teachers about the material being discussed and not understood yet	1
	Show attitude of wanting to ask a friend/teacher about the material being discussed and not yet understood but not finished yet	2
	Have asked a friend/teacher about the material being discussed and not understood yet	3
	Frequently ask friends/teachers about the material being discussed and not understood yet	4
Students participate in working on LKPD with group members	It did not indicate a desire to participate in working on LKPD with the group.	1
	Participate with group friends but only once	2
	Participate in groups working on LKPD but not too enthusiastic or only twice	3
	Participate with the group is working on LKPD with great enthusiasm	4
Students look for references (textbooks/ worksheets) related to the subject	Did not show at all to look for references regarding learning material	1
	Only occasionally looking for references regarding learning material	2
	Done it twice or quite often looking for references in books or worksheet	3
Students are eager to work on the questions given by the teacher and find out their own solutions	Often look for references in textbooks or worksheet	4
	Never work on the questions given by the teacher	1
	Rarely work on the problems/questions given by the teacher and do not find out the solution itself	2
	Often worked on the questions given by the teacher but sometimes did not find out the solution itself	3
	Work on the questions given by the teacher and find out the solution itself	4

To calculate the number of individual scores obtained from the measurement of the character of curiosity, the

value of the character of the curiosity of individual students can be calculated with divided the total score by the maximum score ($5 \times 5 = 25$). After obtaining individual scores, each student's curiosity character can be categorized. The categories of students' curiosity can be seen in Table 2.

Table 2: Category Character of Student Curiosity

Score	Category
81,00 – 100,00	Had become a habit
61,00 – 80,99	Already developed
41,00 – 60,99	Began to develop
21,00 – 40,99	Start to Appear
0 – 20,99	Has not seen yet

Clarification results from the value of the character of curiosity obtained calculated the percentage to determine the number of students who are in the curiosity character category. Percentage calculations can be formulated as follows [27]:

$$P = \frac{f}{N} \times 100\%$$

N Note :

P = Percentage rate

f = Frequency that is being sought a percentage N = Number of frequencies/number of individuals

Referring to the 2010 Character Education Terms of Reference by the Director-General of Higher Education, the results of observations, anecdotal notes, report assignments, and so on are used to draw conclusions/considerations about achieving an indicator value. These conclusions/considerations can be stated in qualitative statements and have the meaning process of character building as follows.

Table 3: Student Character Building Criteria

Criteria	Information
BT Not seen yet	If students have not shown the initial signs of behavior stated in the indicator because they do not understand the meaning of the value (Anomic stage)
MT Start to Appear	If students have started to show various behavioral signs that are expressed in indications but have not been consistent because there is already an understanding and get a strengthening of the nearest environment (heterotomy stage)
MB Start to develop	If students have shown a variety of behavioral signs expressed in indicators and are starting to be consistent because, in addition to understanding and awareness, there is also the strengthening of the nearest environment and wider environment (Sociotomy stage)
MK Entrenched	If students continuously show the behavior expressed in indicators consistently because in addition there is already an understanding and awareness and get a strengthening of the nearest environment and the wider environment moral maturity has grown (Autonomy Phase)

Source: A Framework for Character Education Acknowledgment, Director General of Higher Education, 2010.

III. RESULTS

Science learning using the guided inquiry model which includes the following steps. 1) Stimulation, 2) Problem Statement, 3) Data Collection, 4) Data Processing, 5) Verification and 6) Generalization. Learning activities carried out during 6 meetings. Based on the observation of students' character, the following data are obtained:

Table 4: Character Descriptions of Student's Curiosity through the Guided Inquiry Learning Model

Meeting	F	Criteria						amount
		Had become a habit	Already Developed	Start develop	to	Start to Appear	Not seen yet	
1	F	0	0	8		17	0	25
	%	0,00	0,00	32,00		68,00	0,00	100
2	F	0	2	9		14	0	25
	%	0,00	8,00	36,00		56,00	0,00	100
3	F	0	1	13		11	0	25
	%	0,00	4,00	52,00		44,00	0	100
4	F	0	5	13		7	0	25
	%	2,00	9,00	9,00		5,00	0	100
5	F	2	9	9		5	0	25
	%	8,00	36,00	36,00		20,00	0	100
6	F	3	7	13		2	0	25
	%	12,00	28,00	52,00		8,00	0	100

Sumber: Febrianti, 2019

Table 4 shows the Frequency Distribution of Curiosity Character of students obtained through the Guided Inquiry Learning Model. In general, the character value of curiosity experiences a change in frequency that is greater than the criteria "starting to appear" to the criteria "has become a habit" seen from the 1st meeting until the 6th meeting. These findings indicate that the character of students experiences changes in the frequency of appearance of characters from meeting 1 to more at the fifth and sixth meetings.

Science learning by using the STAD model which includes the following steps. 1) conveying goals and motivating students, 2) Presenting or conveying information, 3) Organizing students in study groups, 4) guiding work and study groups as they work on assignments, 5) Evaluation. Learning activities carried out during 6 meetings. Based on the observation of students' character, the following data are obtained:

Table 5: Character Descriptions of Student's Curiosity through the STAD Type Cooperative Learning Model

Meeting	F	Criteria						amount
		Had become a habit	Already Developed	Start develop	to	Start to Appear	Not seen yet	
1	F	0	0	19		4	0	23
	%	0,00	0,00	82,61		17,39	0,00	100
2	F	0	0	20		3	0	23
	%	0,00	0,00	86,96		13,04	0,00	100
3	F	0	1	22		0	0	23
	%	0,00	4,36	95,65		0,00	0,00	100
4	F	0	5	18		0	0	23
	%	0,00	21,74	78,26		0,00	0,00	100
5	F	0	15	8		0	0	13
	%	0,00	65,22	34,78		0,00	0,00	100
6	F	0	12	11		0	0	23
	%	0,00	52,17	47,83		0,00	0,00	100

Sumber: Humaini, 2019

Table 5. shows the Frequency Distribution of Character Value of curious students obtained by the STAD Type Cooperative Learning Model. In general, the character value of a curious character through a change in frequency that is greater than the "start to appear" criteria to the "already developed" criteria seen from the 1st meeting to the 6th meeting. These findings indicate that initially, students have not shown the character of curiosity at the beginning of learning, but the longer the character will appear even though it has not reached yet the criteria "it has become a habit".

IV. DISCUSSION

4.1 Character Description of Student's Curiosity through the Guided Inquiry Learning Model

Based on the observational data, table 2 shows the frequency of the emergence of students' curiosity characters from the first meeting to the sixth meeting on learning science with the guided inquiry model. Data shows that the character of curiosity in the criteria "has begun to appear" at the first meeting 68% but has decreased at the sixth meeting, which is 8%. While the criterion "has become a habit" does not appear at the first meeting and appears as much as 12% at the sixth meeting. From these results, it can be said that the character of students' curiosity in learning science through the guided inquiry model after 6 meetings have shown a change in the frequency of characters that show from the criteria "began to appear" to the criteria "has become a habit" even though in percentage still low. This proves that learning science can improve the character of students' curiosity in the context of this research is through observation activities or practicums that have been compiled by the teacher in the learning plan.. It can be seen from students who are very enthusiastic and many who participate in conducting observation activities or practicum groups. Research by Martini, L. Rosdiana, H, Subekti and B. Setiawan on strengthen students' characters and ecopreneurship through Science, environment, technology, and society course with learning activities designed with Developing a teaching and learning package including syllabus, the lesson plan and assessment shows that that course of science, environment, technology, and society could strengthen the students; characters and ecopreneurship [5]. The character of curiosity is closely related to inference, the skill of identifying and obtaining information, making hypotheses and making conclusions from the information. This is in accordance with the writings of Zulmaulida, Wahyudin, & Dahlan, which describes one of the criteria of proper inference is the evidence obtained will lead to a conclusion [12].

Curiosity is an attitude that shows an action to know more about things that are being learned, heard or seen. The existence of curiosity will cause students to want to learn, because they feel that the lesson becomes a new lesson and to answer their ignorance, so it is necessary to learn. Curiosity is described as a state of emotional arousal caused by uncertainty, so curiosity is the starting point of learning [15]. Teacher guidance during the guided inquiry learning process is able to encourage students' thought processes and curiosity. The guided inquiry model requires students to be active in asking questions and finding information about the material being taught. Teacher questions play an important role to encourage students' curiosity so as to create an inquiry process [8]. Learners conduct research and discovery activities to design new knowledge, develop creativity and independence, analyze opinions, formulate explanations based on data or evidence and evaluate scientific explanations [4]. So, learning science using guided inquiry models can facilitate the teaching of curiosity character learners.

4.2 Description of the Student's Curiosity Character through the STAD Cooperative Learning Model

Character data of students' curiosity with science learning through the STAD type cooperative model as shown in table 3 shows that there was a change in character criteria that emerged from the first meeting to the sixth meeting. Criteria for the character of curiosity that emerged starting from the criteria "start to appear" and have increased at the sixth meeting, namely the criteria "began to develop". These findings indicate that learning science with the STAD type Cooperative learning model can improve the character of students' curiosity.

STAD type cooperative learning gives students the opportunity to ask questions and discuss in groups so that their curiosity can be expressed properly because they have one goal with friends in the same group. In addition, STAD learning methods are learning that involves the recognition of teams where students are divided into several heterogeneous groups based on the level of achievement or level of learning ability [22]. The STAD learning model is more concerned with the attitudes of student participation in order to develop cognitive potential and effective in this case is curiosity, among others 1). Relatively easy to conduct, 2) able to motivate students in terms of creativity and responsibility, 3) train cooperation and help each other, 4) convince students and others that the goals to be achieved depending on their own performance in seeking knowledge, 5) students are able to communicate verbally and nonverbally, and 6) increase students' familiarity.

The result of findings said that science learning can teach characters to students by using innovative learning models namely guided inquiry learning models and STAD type cooperative learning models. Thus, the hope of Science Learning can fulfill the demands of SMP / MTs IPA curriculum 2013 in order to produce qualified Indonesian generations [24,25]. The generation that has knowledge and character.

V. CONCLUSION

Based on the results it could be concluded that students' characters tend to change from "start appearing" to "start developing" criteria. Based on the results obtained, so as to grow the character of curiosity in science learning, then teachers need to design learning by including the character of curiosity in the learning process.

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