

The Scientific Approach and Its Implications on the Formation of the Character of Students

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Abstract

This study aims to determine the implementation of the scientific approach in Citizenship Education (Civics) learning and its implications for the character building of students in the Banjarmasin City Junior High School. The data source in this study was the chairman of the Civics Subject Teacher Conference Banjarmasin City Junior High School, Civics teachers and Banjarmasin SMPN students. Data were collected through interview techniques, observation and questionnaires. Qualitative data were analyzed using an interactive model of analysis, and quantitative data were analyzed using the SPSS version 25 program. The results of this study indicate that almost all Civics teachers have implemented a scientific approach to learning. However, there are some of them who have not applied ideally because of the limited facilities they have at school, such as textbooks and learning media. With the application of a scientific approach in Civics learning, students are more active and disciplined in following lessons, there is cooperation in doing assignments, being responsible with assignments, and more confident. Thus it can be said that the scientific approach has implications for the formation of student character. This is also in accordance with quantitative data analysis which proves the hypothesis that the scientific approach affects the character of students. From the results of this study it is suggested that teachers, especially PPKn teachers, can apply a scientific approach in learning according to the demands of the 2013 curriculum.

Keywords

scientific approach, learning, student character

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Preliminary

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Various efforts have been made by the government in order to improve the quality of education. One of them is through improving the curriculum. The curriculum is essential for the success of an education. Without an appropriate and appropriate curriculum, it is difficult to achieve educational goals as expected. Indirectly, curriculum and learning have a reciprocal relationship. As explained by Oliva & Gordon (2013) "curriculum can be conceived as the " what "or ends, and instruction as the" how "or means" which means that the curriculum is related to what will be taught while learning is related to how to teach it. Sukmadinata and Erliana (2012) argue that the curriculum is the core of the educational process, because among the fields of education, namely education management, curriculum, Currently, most schools in Indonesia have implemented the 2013 Curriculum, which is a refinement of the previous curriculum. The 2013 curriculum was developed with a philosophical foundation that provides the basis for the development of all potential students to become quality Indonesians as the goal of national education. Thus, the 2013 Curriculum is expected to be able to develop students' individual lives in religion, art, creativity, communication, values and various dimensions of intelligence that are appropriate to a student and what society, nation and state need. It is hoped that the 2013 Curriculum will be able to create superior, creative and innovative students who are able to overcome various challenges. Mulyasa (2014) said that the implementation of the 2013 Curriculum requires teachers to organize learning effectively. Hosnan (2014) states that there are many components attached to the 2013 curriculum, and the most prominent thing is the learning approach and strategy. Fadlilah (2014) states that the characteristics of learning in the 2013 Curriculum are in a learning technique known as the scientific approach. Rusman (2015) stated pThe scientific approach is a learning approach that provides students with opportunities to explore and elaborate the material being studied, in addition to providing opportunities for students to actualize their abilities through learning activities designed by the teacher. While Hosnan (2014); Karar and Yanice (2012) state that the scientific approach is a learning process designed so that students actively construct concepts, laws, or principles through observing, formulating problems, proposing / formulating hypotheses, collecting data with various techniques, analyzing data, drawing conclusion, and communicate. The learning process using a scientific approach must touch three domains, namely: attitudes, knowledge, and skills (Kemendikbud, 2013). The scientific approach has principles that are also its advantages, including: (1) student-centered learning, because in the process this approach gives students the opportunity to assimilate and accommodate concepts, laws, and principles thereby encouraging an increase in students' thinking skills, (2) learning increases student motivation and teacher teaching motivation, and provides opportunities for students to be able to practice communication skills so as to avoid the dangers of verbalism (Kemendikbud, 2013). The scientific approach is intended to provide understanding to students in recognizing, understanding various materials using scientific methods, that information can come from anywhere, anytime, not depending on direct information from the teacher. Therefore, the learning conditions that are expected to be created are directed at encouraging students to find out various sources through observation and not just being told (Daryanto, 2014; Siddiqi et al., 2021). Another opinion was expressed by Hosnan (2014) that the objectives of implementing a scientific approach in learning are: (1) It aims to improve intellectual skills, especially students' higher order thinking skills; (2) Develop students' skills in solving systematic problems that occur; (3) To create teaching and learning conditions where students consider that learning is a must; (4) aims to produce high learning activities; (5) To train students to communicate ideas, especially writing a scientific article; and (6) Improve and develop the character of each student. Banjarmasin City is one of the cities in South Kalimantan where most of the schools including Junior High Schools (SMP) have implemented the 2013 Curriculum. This study aims to determine: (1) The implementation of a scientific approach in teaching Pancasila and Citizenship Education; (2) teacher constraints in implementing the scientific approach; and (3) The influence of the scientific approach in shaping the character of students.

Research Methods

Research Approach

This study uses a Mixed Methods approach (combined research methods), which is a combination of qualitative and quantitative research methods (Sugiyono, 2014; Shabbir et al., 2020). The Mixed Methods approach was chosen because it was used to obtain more comprehensive data. The first stage uses a qualitative approach and the second stage uses a quantitative approach.

2.2 Respondents and Research Sample: Respondents in this study were the chairperson of the curriculum instructor, the head of the Pancasila and Citizenship Education Subject Teacher Conference, the Pancasila and Citizenship Education Teachers who were selected purposively. The characteristics of the respondents can be seen in the following table

Table 1.
Characteristics of Research Respondents

NO	Name	Long time being a teacher	Level of education	Institution	Position
1	MH	20 years	S1	SMP N 15	Curriculum Instructor
2	RD	21 years	S1	SMP N 15	Teacher
3	SW	23 years	S1	Middle School 35	Chairman of the MGMP
4	YN	26	S1	Middle School 24	Teacher
5	WL	20	S1	Middle School 24	Teacher
6	JP	24	S1	Middle School 13	Teacher
7	MM	28	S1	SMP N 1	Teacher
8	NA	30	S1	SMP N 6	Teacher
9	FY	1 year	S1	SMP N 6	Teacher
10	RD	10 years	S1	SMP N 15	Teacher
11	JF	15 years	S1	Middle School 14	Teacher

The research sample consisted of 212 students who were randomly selected. Sample details for each school can be seen in the following table

Table 2.
Research Sample

No.	School name	Number of Samples
1	Junior High School A	47 people
2	SMP Negeri B	48 people
3	Junior High School C	48 people
4	Junior High School D	50 people
5	Middle School E	29 people
	amount	222 people

Research procedure

First, make observations to obtain data about the implementation of the scientific approach in Learning Pancasila and Citizenship Education. Second, conducting in-depth interviews to obtain data on various obstacles faced by teachers in implementing the scientific approach. Interviews were conducted privately on different days for each respondent, with an average duration of 30-40 minutes. Interviews were recorded using a voice recorder. Third, distribute questionnaires to students to collect data about the implementation of the scientific approach and data about student character.

Interview Topics and Research Variables

The research team proposed three topics for the interview, namely:

- (1) Application of a scientific approach in learning
- (2) Teachers' constraints in applying the scientific approach

Example questions for the first topic are "What are the steps in carrying out learning with a scientific approach?". An example of the second topic question is "What obstacles do you experience in apply⁴⁶ the scientific approach?"

While the variables in this study are:

- (1) The application of the scientific approach, which is measured by the role of the teacher in carrying out the stages of the scientific approach both from the observation stage, asking questions, gathering information, analyzing / processing information and communicating
- (2) Student character as measured from railsigenius, communicative, responsibility, discipline, hard work, teamwork, and self-confidence

Data collection for each variable was carried out with a closed questionnaire using a Likert scale.

Data analysis

¹² The qualitative data were analyzed using an interactive model of analysis.⁹ Activities in data analysis are carried out interactively and take place continuously until completion, so that the data is saturated. Activities in the analysis include three components, namely data reduction, data display and conclusion drawing / verification. Miles and Huberman (1992).

Quantitative data were analyzed using the SPSS version 25 program.

Research Result

⁶ In collecting data and information about the implementation of the scientific approach at the State Junior High School in Banjarmasin City, the researcher made direct observations to see the learning process. The first observation was carried out at SMP Negeri 15 Banjarmasin, to be precise in class VIIIc. The learning process uses a scientific approach with the subject of the youth oath in the framework of Bhinneka Tunggal Ika. The core learning process²⁵ begins with students being asked to observe the pictures in the book, after a few minutes students are asked to look for information related to the images observed via the internet on their respective cellphones. Then the teacher instructs the students to record the summary and the points on the internet in the student notebooks. After all students have finished recording the information obtained on the internet, During the Civics learning process in class VIIIc, students generally take the learning seriously. However, it was also seen that there were some students who were not serious, were lazy, and bothered their friends who were studying. This is due to several factors, the first is because the student does not have a cellphone that can be connected to the internet to find information related to the assignment given by the teacher. Second, students have cell phones, but they don't have internet data packages so they can't access the internet either. When there are several students who have finished presenting the results of their observation notes on the internet. Furthermore, a question and answer session was opened to train students in critical thinking and problem solving. The other students were not too active to be involved in the discussion process.¹³ so the teacher asked the students who looked less active to ask questions. The enthusiasm of students in the learning process is one of the factors that³ must be considered by the teacher, as said by MM who said that: Indeed, one of the obstacles in the learning process in this class is that students are not too enthusiastic when the learning process takes place, maybe because Civics subjects are placed in the last hour, so students feel tired and sleepy as a res⁷ the Civics learning process is not carried out properly. Another thing that is an inhibiting factor in the Civics learning process using a scientific approach according to Mr. MM is about the completeness of the facilities owned by the school, as he said that: The equipment for facilities such as LCDs and laptops in this school is still lacking so that it is also an obstacle in the PPKn learning process, not all students here have laptops, then the LCD is also very limited here, only having two, if here in every class there is an LCD Of course the Civics learning process that uses a scientific approach will run well and smoothly. The same thing was also said by Mr. SW who was a Civics teacher at SMPN 35 Banjarmasin, he said that: The main obstacle in this school in the Civics learning process is due to the limited number of textbooks for students. So far, students do not have textbooks, because the number of textbooks in this school is limited. So at this school we are struggling to ideally apply the scientific approach, while some of the basic requirements are not fulfilled.

Then he added that

This may be the risk of suburban schools because the majority of students who go to school here

are still living in the suburbs of Banjarmasin city such as Alalak, Berangas, and Kuin. This is what results in students not being much responsive when the learning process takes place because the learning climate is not built from the family and the surrounding environment. Meanwhile, the Civics learning process at SMPN 24 Banjarmasin, looks different from the one in the previous school. In this school the Civics learning process using a scientific approach begins with the previous meeting students are divided into several small groups, and students are assigned to observe / look for material during the National Movement then the teacher instructs students to look for some related information that can be obtained via the internet or at books, magazines, newspapers and others. After the sources have been collected, students are asked to make a chapter report (observation report) and the observation report can be written in the form of a powerpoint or a caption (concept map) which is packaged as creatively as possible. The students presented their reports carefully, paid close attention to by the other groups, after the students had finished presenting the reports, students from other groups had raised their hands, then 3 groups were selected to ask questions. Each question is answered properly by the presenter group. After that the teacher added and corrected the answers to the students' questions and together drew conclusions. Ms. YN further added that: The Civics learning process using a scientific approach can also be collaborated with learning models such as Problem Based Learning (PBL), Inquiry, and other learning models, because the learning mechanism process is in tune with the learning mechanisms in the scientific approach. Regarding the inhibiting factors for the Civics learning process that uses a scientific approach, Mrs. YN said that: "One of them is to keep the spirit of students so that they will continue to be enthusiastic when the PPKn learning process takes place. This is a bit difficult where the students' enthusiasm fluctuates, sometimes they pay attention seriously, sometimes they are noisy or busy joking with their friends during the learning process." The same thing was said by Mrs. JF, who is a Civics teacher at SMPN 14 Banjarmasin, she said that: This school is an inclusive school so the obstacles we face are when the learning process cannot be understood by those who fall into the category of Children with Special Needs. Sometimes it is helped by frier⁴² but due to the limited ability of the school to manage all students with special needs, Civics learning with a scientific approach is not optimal. Meanwhile, the results of observations of the Civics learning process at SMPN 6 Banjarmasin using a scientific approach began when the teacher delivered the class IX material, namely Globalization, the teacher asked students to open their respective cellphones to look for material related to globalization. After students get various materials, students are asked to read and record things that are deemed necessary with the material read on the internet. Students are then divided into small groups and assigned to observe things around them regarding the positive and negative impacts of globalization, then the teacher assigns students who are given 4 days and students are asked to make the assignment in the form of notes after that also made a power point (PPT) to be presented. At the next meeting students are asked to sit in accordance with their respective groups, and the teacher randomly appoints a group that will present the assignment that the teacher has given at the previous meeting, student presentations after that there is a discussion session where each group is obliged to give questions⁷ and be answered by the group who presents the material. When asked about the obstacles in the learning process using a scientific approach, he said that: "Maintaining student motivation to stay enthusiastic in learning Civics, especially if the Civics subject is in the last hour of course the enthusiasm of most students has decreased, it's different if the Civics subject matter. be in the early or mid hour." For the Civics learning process at SMPN 1 Banjarmasin, the researcher made observations in class VIII B. In the learning process it was seen that the teacher in this activity started by telling students to read the material in the textbook, after which the students were assigned to answer the questions was in the book, after completing the task it was corrected collectively. Then the teacher provides an explanation related to the tasks that students have done. In the researcher²⁷iew, teachers at SMPN 1 Banjarmasin are less able to provide Civics learning processes using a scientific approach because in the learning process the teacher only focuses on book learning resources, without involving other learning sources. The researcher also asked the teacher for what reason so that only book sources were used in the Civics learning process at the school, then Mrs. IN said that: This is one of the impacts of the zoning system in the admission of new students, because in the past our school set high standards or strict selection to be able to enter this school, but now because of this zoning system, we can no longer set high standards so that students- Today's students become mixed and this results in the lack or delay of students in capturing the learning material."

In addition, he also added that

I am worried about giving assignments to students to observe directly in the field, because it is my responsibility as long as they are in the field if things go wrong. Therefore, until today, I have never assigned students to observe directly in the field. In addition to conducting observations and interviews with teachers, researchers also distributed questionnaires to students to find out about the implementation of the scientific approach in Civics learning. The results of the questionnaire recapitulation can be seen in the following figure

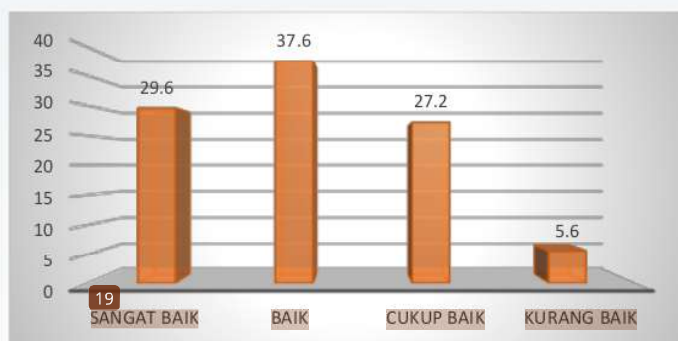


Figure 1 Implementation of the Scientific Approach in Civics Learning

From the table above, it is illustrated that 67.2% of students thought that the PPKn teacher was good and very good at implementing the scientific approach in Civics learning and only 5.6% thought it was not good. By implementing a scientific approach in Civics learning, it is expected to have an influence on the character building of students. To find out about the character of students, in connection with the application of the scientific approach, the researcher collected data through a questionnaire, the results of which can be seen in the following figure

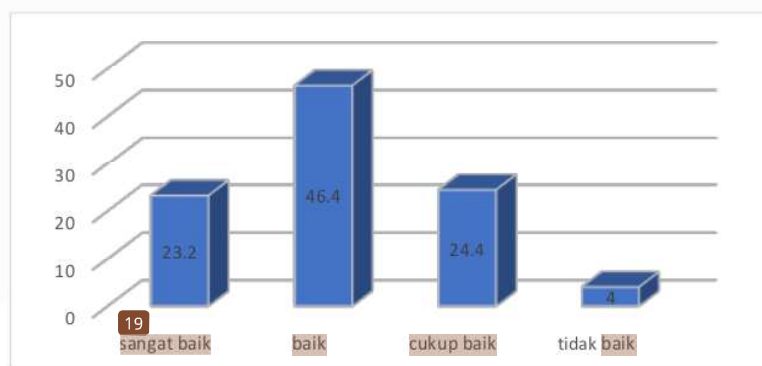


Figure 2. Description of Student Character

From the picture above, it can be seen that the characters of the SMP Negeri students in Banjarmasin City mostly reflect good and very good characters (69.6%) followed by moderate categories (24.4%) and 4% which reflect poor characters. To find out the effect of the scientific approach on the character of students, the Moment product test was then carried out using the SPSS version 25 program. The results of these tests can be seen in the following table

Table 3.

Correlation Coefficient of Application of Scientific Approach to Student Character

	Scientific	character
Scientific	1	.179 **
c		.008
	222	222
charac	.179 **	1
ter	.008	

** . Correlation is significant at the 0.01 level (2-tailed).

From the table above it is known that r count is 0.179 and r table with $N = 222$ is 0.11, thus H_0 is rejected. So it can be concluded that the scientific approach has an influence on the character of students.

Discussion

In implementing something, of course it is very much influenced by one's knowledge and understanding, as well as the scientific approach. As already mentioned in the previous section, in general, Pancasila and Citizenship Education teachers have implemented a scientific approach in learning, but there are still some teachers who have not ideally implemented the steps as in the scientific approach. The results of this study are also not much different from previous research conducted by Zaim (2017) which examined the implementation of a scientific approach in learning English in high schools in Padang. The results of his research shows that, among the five steps of the scientific approach, the teacher has not been able to carry out the steps to observe and ask questions optimally. However, other steps can be carried out well. Another study was conducted by Suyanto (2018) who examined the application of science in eight high schools over a period of three years. The findings state that those belonging to the good category in implementing the scientific approach do not reach 30% with the following details: (1) Observing (M1) 22.7%, (2) Asking questions (M2) 27.8%, (3) Doing experiment (M3) is 23.9%, (4), Reasoning (M4) is 7.9%, and (5) Communicating (M5) is 18%. The results of his research concluded that teachers still need more training in carrying out the scientific process through 5M. Similar results were also presented by Scientific and Setiawan (2019), who in their research concluded that student scientific iterations have not been optimally trained, this can be seen from the inaccuracy of students in concluding information based on analysis or not being able to make conclusions accurately. In this study, most of the teachers already had a good understanding of the scientific approach. It's just that in the application of the elements of observing, asking, gathering information, processing information, and communicating (5M) you have a different understanding. Understanding of these different applications certainly affects their application in the classroom. Teachers who understand 5M must be applied sequentially, so when observations are made they also apply as understood. As was done by Civics teachers at SMP Negeri 15 Banjarmasin. The core learning process begins with students being asked to observe the pictures in the book, after a few minutes students are asked to look for information related to the images observed via the internet on their respective cellphones. Then the teacher instructs the students to record the summary and the points on the internet in the student notebooks. After all students have finished recording what information was obtained from the internet, several students were then appointed to read the results of their notes to the front of the class in turn. Furthermore, a question and answer session was opened to train students in critical thinking and problem solving. With question and answer, students are trained to be able to express their opinions as stated by Hosnan (2014) do a question and answer provide opportunities for students to practice skills in communication. Different implementations were applied by other PPKn teachers in that in implementing 5M it did not have to be in one meeting and did not have to be sequential as was done in SMP Negeri 24. The scientific approach started at the previous meeting, which at the previous meeting the teacher divided students into small groups, and students are assigned to observe / look for material on the era of the National movement. The teacher instructs students to look for some of the related information that can be obtained via the internet or in books, magazines, newspapers and others. At the next meeting, students are asked to make a chapter report (observation report) and the observation report can be written in the form of a powerpoint or a caption (concept map) which is packaged as creatively as possible. After the report is finished, students are asked to present the results of their reports. After students have finished presenting the report, students from other groups are given the opportunity to ask questions. Each question is answered properly by the presenter group. After that the teacher adds and corrects the answers to the student's questions and together draws conclusions. Although there are different interpretations of the sequence or steps in the scientific approach, overall it has no effect on the objectives of the application of the scientific approach. This can be seen clearly from the discipline and activeness of students in following lessons, the cooperation in doing assignments,

being responsible with assignments, and being more confident when presenting the results of group work. Thus it can be said that the scientific approach has a significant influence in shaping attitude or character of students. The results of these observations are also in accordance with the results of quantitative data analysis which prove the hypothesis that the scientific approach has an influence on student character. The results of this study are in line with the results of research by Yulianto et al. (2018), which in their conclusion states that the average scientific approach is more effective in developing the character of discipline and student responsibility compared to conventional learning. This is in accordance with what was said by Hosnan (2014) states that one of the learning objectives using a scientific approach is to develop student character. A similar statement was made Joyce, & Weil (Apriani and Wangid, 2015) that the scientific method which is another to the scientific approach can be taught and has a positive effect on the acquisition of information, concepts, and attitudes. That is, the scientific approach is believed to be able to develop the realm of students' attitudes, skills and knowledge with the aim of developing a good character. Sani (2015) argues that the scientific approach is an approach that is closely related to the scientific method and the absorption of this approach has a positive effect on cognitive, affective and psychomotor learning outcomes and can achieve classical completeness. This opinion is in accordance with Machin's research results (2016) that the application of the scientific approach has a positive effect on cognitive, affective and psychomotor learning outcomes and has achieved the specified classical completeness. Wahyuni et al. (2016) which in the results of their research suggests that with a scientific approach mastery of social science knowledge competency and students' social attitudes in the learning process tend to change in a positive direction. Based on the results of this study, it can be concluded that the application of a scientific approach based on character education can improve the mastery of competence in knowledge and social attitudes of the VB grade students of SD Negeri Gubug in the 2015/2016 academic year. The achievement of better learning outcomes through the application of the scientific approach was also suggested by Bermawi and Fauziah (2016) and MR Ramdhani, B Usodo and S Subanti (2018). Aminuddin et al (2021) who in their research conclusions stated that the level of learning outcomes obtained was better through the application of a scientific approach. Based on the results of this study and several other studies, then all PPKn teachers should be able to apply a scientific approach in accordance with the demands of the 2013 curriculum.

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Conclusions And Suggestions

From the results of this study it can be concluded that almost all Civics teachers have understood and implemented the scientific approach in learning. However, There are some teachers who have not ideally implemented it, due to the limited facilities they have at school, such as textbooks and learning media. With the application of a scientific approach in Civics learning, it is clear that students are more active and disciplined in following lessons, there is cooperation in doing assignments, are responsible with assignments, and are more confident when presenting group work results. Thus it can be said that the scientific approach has implications in shaping the attitudes or character of students. The results of these observations are also in accordance with the results of quantitative data analysis that the implementation of the scientific approach affects the character building of students. From the results of this study it is suggested that teachers, especially Civics teachers, can apply a scientific approach in learning in accordance with the demands of the 2013 curriculum. For teachers who do not understand the application of the scientific approach, they should attend various workshops, trainings or seminars related to the material of the scientific approach, so that they can apply it well in learning.

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