

The Analysis of the Scientific Approach Process and Learning Outcomes at 5th Grade Students of SDN Kepatihan 07 Jember

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Abstract: This study was conducted with the aim of determining how the scientific approach process and the learning outcomes of the cognitive aspects at the 5th grade students of SDN Kepatihan 07 Jember. This study was conducted at SDN Kepatihan 07 Jember in the first semester of the 2020/2021 school year. The subjects of this study consisted of a teacher and 36 students. This study was a descriptive method by applying the data collection process in the form of observation, interviews, and documentation. The scientific approach applied to theme 2: "Clean Air for Health" at the 5th grade students of SDN Kepatihan 07 Jember had been implemented properly during the pandemic. The results of this study indicated that: (1) The teacher had compiled the lesson plan and implemented learning activities with a scientific approach carried out from home (Learning From Home). Activities containing scientific skills carried out by students included: (a) observation skills of 63.5%, (b) questioning skills of 26.75%, (c) experimental skills of 37.25%, (d) reasoning skills of 20%, (e) communicating skills through writing by 33%. (2) Student learning outcomes were obtained in the form of student scores in the Mid-Semester Assessment. Students who had qualified were amounted to 25 out of 36 students, with the percentage of 69% and students who had not qualified were amounted to 31%. Scientific skill activities and higher learning outcomes are interrelated.

Keywords: Scientific approach process, Student learning outcomes

1. INTRODUCTION

Curriculum 2013 is implemented sequentially in every school ranging from Elementary Schools, Junior High Schools, and Senior High Schools all over Indonesia (Kemendikbud, 2015:14). The implementation of the Curriculum 2013 focuses on learning with a scientific approach. This approach is one of the approaches in Indonesian education level that has long been implemented by the term "learning by doing".

Referring to the National Education System Law No. 20 of 2016 concerning National Education Standards (NES), the curriculum is explicitly stated as a set of plans and arrangements in connection with the objectives, contents, and learning materials as well as methods utilized as guidelines for providing sets of learning activities to achieve a specific educational goal. The Curriculum 2013 is a new curriculum which comes to add or even to replace the previous curriculum, specifically the Curriculum 2006.

Curriculum 2013 is specifically prepared to create the next generation of nation that focuses on the goal of encouraging students to apply the process of observing, questioning, reasoning, and communicating information that has been obtained and identified in the learning process. The Curriculum 2013 is applied to stimulate the teachers to implement activities in accordance with the scientific approach. Therefore, if the activities involved in the scientific approach have not been able to be implemented properly, then the implementation of the Curriculum 2013 is also declared not going as expected.

In the Regulation issued by the Minister of Education and Culture No. 81A of 2013, it is stated that the learning process according to the Curriculum 2013 is a learning process consisting of 5 major learning experiences,

specifically: (1) observing; (2) questioning; (3) collecting information; (4) associating; and (5) communicating. The scientific approach is highly considered suitable to be applied in the implementation of the Curriculum 2013, because the stages are in accordance with the general guidelines for learning in the curriculum implementation.

The scientific approach is a student-centered learning process and the teacher only acts as a facilitator in the learning process. Learning by applying a scientific approach is a learning activity specifically designed for students to carry out an active learning process through systematic stages. This learning is expected to produce a more effective and systematic learning process for students in class. In addition, teachers must also be able to educate students through relevant and contextual problems, because this can encourage students to learn from their surroundings.

Budiyanto (2016: 46) regarded that the scientific approach is considered as a golden step in developing aspects of student attitudes, skills and knowledge. In terms of knowledge, the application of the scientific approach is certainly more able to develop student idea, because students are required not to be passive in the learning process. Furthermore, more effective and meaningful learning for students will be subsequently created.

The scientific approach has certain objectives including developing students' thinking skills, fostering students' ability to solve problems systematically, and creating effective learning conditions, so that learning activities are considered to be really needed. In addition, it aims to train students to express the results of their thinking, improve their learning outcomes, and to develop student character.

Students will subsequently learn and develop their thinking, and the material used derives from their environment, so that the material provided can be reached easily by students. Learning by implementing the scientific

approach in the Curriculum 2013 is in the form of Integrative Thematic. This process plays a role in integrating the stimulus in students' thinking. Learning that derives from the environment and reaches material that is close to students will certainly be easier for students to accept. Therefore, changes in student behavior for the better of their environment will be automatically created.

Djamarah (in Marjan, 2014:3) stated that learning outcomes are considered as a series of mental and physical activities to obtain a change in behavior as a result of an individual's experience of interacting with his/ her environment concerning cognitive, affective and psychomotor. Maximum learning outcomes can be obtained if an analysis is carried out regarding the causes of low learning outcomes. Several factors that are considered as the cause of low learning outcomes include: (1) the lack of readiness of students in receiving lessons; (2) less innovative learning; and (3) teacher-centered learning which is still being applied.

Referring to that matter, Marjan (2014:11) stated that student learning outcomes can be improved more effectively through the application of a scientific approach compared to the conventional learning models. Learning through a scientific approach is more suitable in improving aspects of student skills.

2. METHOD

This study was a descriptive study. Descriptive study is defined as study that aims to describe in detail a situation scientifically (Masyhud, 2016:104). This study was applied with the aim of describing how the application of learning through a scientific approach. In addition, this study also aimed to evaluate the student learning outcomes without connecting, testing hypotheses, or making predictions based on qualitative data.

The data collection methods used in this study consisted of; (1) observation, (2) interviews, and (3) documentation. Besides that, several procedures applied in this study consisted of; (1) the preparation stage, (2) the implementation stage, and (3) the reporting stage. Sources of data in this study were 5th grade students and teachers of SDN Kepatihan 07 Jember and their learning outcomes related to the learning on theme 2: "Clean Air for Health". This study used non-test instruments in the form of interview guides, questionnaires, and documentation guides.

The data processing and analysis technique used in this study was qualitative data analysis. According to Miles and Huberman (in Sumaharti, 2017:6), the data analysis techniques applied in this study consisted of 3 stages, specifically data codification, data display, and data verification.

3. RESULTS AND DISCUSSION

According to Circular Number 4 of 2020 on the Implementation of Education Policies in an Emergency for the Spread of CoronaVirus Disease (COVID-19), that learning activities and tasks from home can be carried out in

a variety of ways, according to the conditions and interests of each gaps in access to student learning facilities at home.

According to the Minister of Education and Culture No. 81A of 2013, attachment IV, that the learning process by applying the scientific approach consists of five major learning experiences, specifically: the skills of observing, questioning, experimenting/ collecting information, reasoning/ associating, and communicating.

Based on the results of interviews with grade 5 teachers, it was found that the Learning Implementation Plan (LIP) in semester 1 had been successfully finished, but it was not used by teachers in the learning process during the pandemic because the learning process was carried out through assignments. Based on the results of student learning observations, it can be seen that in grade 5, the learning activities were formed through a scientific approach.

The activity of observing consisted of the process of sight, reading, listening and heeding. Sight activities that had been carried out included the process of students seeing pictures/ illustrations on the questions. The observing activity was carried out represent to 63.5% in this learning process. Sight comes from the word "see" which according to the Great Indonesian Dictionary (GID) means using the eyes to look. Students looked at the pictures on the questions or material to understand or get information, so that students were able to answer questions about the assignments they were doing.

Reading activities that were carried out were in the form of reading material in students' thematic books. Students also read the text on the questions to answer questions in accordance with the reading text. Accordance with Hodgson's statement (in Rosyana, 2015:1), that reading is a process that aims to obtain information conveyed through written media.

Listening activities that were implemented is listening to explanations from parents and teachers regarding to material that was not understood and asked by students. Listening ability is a process of understanding to obtain information and attitudes from the speaker whose aim to understand the conversation objectively (Sari, 2016:1). Students asked their parents/ siblings who accompany them to study, while in understanding the explanations given by the teacher, students must be involved in the learning process which was carried out through video calls. In the process of listening to the resource's explanation, students tended to lack concentration, therefore, the explanation must be repeated so that students obtained the necessary information. The environmental conditions of students studying at home will certainly affect the student's concentration skills.

According to Tarigan (in Siregar, 2014:6), heeding is a process of listening to verbal attentively, understanding, appreciation, and interpretation so that information, content or messages are obtained from the speaker and students are able to understand the meaning of communication that has been conveyed by the speaker through speech or spoken

language. Heeding activities that were carried out in this learning process were heeding to the explanations from parents/ siblings and also teachers about difficult questions, in the form of High Order Thinking Skills (HOTS) questions. Students tried to understand the resource's explanation to answer their assignment questions. Heeding activities were not often carried out like listening activities. Generally, students who do heeding activities will provide feedback in the form of questions that discuss more deeply the material they are learning. In addition, some students were also easily distracted by things in the home/ learning environment of students, so that students were impediment to carry out the observing activities. Students should spend more time in the process of obtaining information/ answers to questions from observing activities by repeating observing activities, specifically when students were involved in the reading process.

The questioning activity was carried out in the form of asking questions from teacher to student, student to teacher, student to student, and student to parent/ family. The questioning activity was carried out represent to 26.75% in this learning process. According to Hasibuan and Moedjiono (in Alisyah, 2017:7), the activity of asking questions is a verbal expression that requires a response from someone who is being asked. The activity of asking questions from teachers to students was carried out in the second questionnaire observation. The teacher asked the students by means of video call on what the students were confused about or student questions that aroused from the assignment given by the teacher. The teacher implemented the online learning process to answer questions and students' confusion previously conveyed through the What Sapp group.

The questioning activity from student to teacher was carried out through the social media. Students tended to ask about the purpose of their assignment questions. Students also asked about the material they did not understand to the teacher by means of video calls. Students determined the answers to the assignment questions that had been discussed with the parents of students, to ensure that the students' understanding of the answers that had been given was correct. The questioning activity from students to other students was not fully implemented properly, students asked the questions to other students about specific answers directly, and they did not asking questions to find additional information that will increase their knowledge and understanding. In addition, the questioning activity from students to parents/ family had been successfully carried out. Students tended to ask their parents/ older siblings about their assignments. According to Majid (in Alisyah, 2017:5), questioning is one of the techniques used to attract the attention of listeners, particularly about the important information that demands attention and that needs to be asked. Some students who did not have cell phones were very constrained from looking for additional explanations on the internet, so they tended to ask their parents/ family.

Experimental activities consist of conducting simple experiments, reading sources apart from textbooks, and

conducting interviews with resource persons. Experimental activities had been carried out represent to 37.25% of all indicators contained in experimental activities in this learning process. The activities carried out in the experimental activity were reading other sources apart from textbooks and interviewing the speakers. Experimental activity is a follow-up process of questioning activity. Students tried to find information from the internet by reading articles and information found on the internet. Some students searched for information on the internet through their sibling' cell phones, because students were not allowed to use cell phones by themselves. On the internet, students tended to search for terms that students still do not understand. Sudjana (in Nugraha, 2015), stated that interview is a process of collecting information or data that is carried out in person involving the interviewer and the interviewee. Students also conducted simple interviews by asking the names of family members who had a history of asthma. Students asked to complete the assignment by writing the name of the student's family member who had a history of asthma.

The reasoning activity was carried out in an activity of processing/ discussing information that increases insight, looking for solutions, and conclude. All of these activities had appeared in the learning process represent to 20% of all indicators in reasoning activities. Students discussed information that increases insight by discussing material that was still not understood with the teacher to get a deeper understanding through video calls. Students asked about the information that had been obtained and then confirmed it to the teacher, and then the teacher also explained more in the material that students had learned. The results of the second observation indicated that students discussed with the teacher by starting the process from a question related to the reasons for preparation for performing a dance demonstration. The teacher then explained, starting from how the dance is performed, what properties are used, and what a dance is for, so that it increased a deeper understanding of the students. In addition, students also discussed a problem for finding a solution. Students discussed it with their parents/ families the reasons that traditional dances need to be developed in the environment around students. The parents of the students began explaining the regional dance which was increasingly being forgotten, so that the students were then able to conclude the results of the discussion with their parents. By their assistance, students conclude to answer their assignment questions. Finally, students conclude from the reading material, as well as an explanation from the parents of students after they had listened. The conclusion was in the form of sentences written by students as answers to essay questions, as well as in the form of knowledge that made students able to answer multiple choice questions.

Communicating activities were in the form of a communication process through written, verbal, and other media. In communicating activities, the process was carried out only through writing represent to 33% of all indicators of

the scientific approach that had been made in this learning process. The teacher only assessed the students' assignments in the form of written assignments, because the facilities owned by students were insufficient to be used online. Students wrote multiple choice answers and essays on the students' answer sheets. Communicating activities that were not carried out were communicating process through verbal and other media.

The assessment carried out by the teacher in this learning process was a written test. This assessment was carried out within a limited period of time and under certain conditions. Assessment of true-false/ multiple choice answers, short filling, and matching is a type of assessment that only assesses low thinking skills, particularly the retention ability (Djuanda, 2010: 3-4).

The learning outcomes of grade 5 students at SDN Kepatihan 07 Jember were in the form of student scores in the Middle Semester Assessment (MSA). Students who had qualified were amounted 25 out of 36 students, with the percentage of 69% and students who had not qualified were amounted to 31%. Students who had not achieved a qualify score would be given a remedial test. The average student score was 72, specifically 18 students with a score above the average The student's highest score was 90 and the lowest score was 0.

4) CONCLUSION

The outcome of this study can be concluded as follows: (1) the teacher had compiled the lesson plan and implemented learning activities with a scientific approach carried out from home (Learning from Home). Activities containing scientific skills carried out by students included: (a) observation skills of 63.5%, (b) questioning skills of 26.75%, (c) experimental skills of 37.25%, (d) reasoning skills of 20%, (e) communicating skills through writing by 33%. (2) Student learning outcomes were obtained in the form of student scores in the Mid-Semester Assessment. Students who had qualified were amounted to 25 out of 36 students, with the percentage of 69% and students who had not qualified were amounted to 31%.

Suggestions provided by this study are: (1) for teachers, to develop learning activities that be able to improve students' abilities in scientific activities of asking, experiment, reasoning, and communicating. (2) For headmaster, to provide new information in developing scientific approach-based learning in schools. (3) For other researchers, this information can be developed for further research consideration.

REFERENCES

- [1] Alisyah, S.N. 2017. *Peningkatan Kemampuan Bertanya dan Prestasi Belajar Matematika Siswa melalui Pembelajaran Kooperatif Tipe NHT Kelas VII E SMP Muhammadiyah 1 Purwokerto*. Purwokerto: Universitas Muhammadiyah Purwokerto. (Online). <http://bit.ly/2WIFLAI> [diakses pada tanggal 16 Desember 2020]
- [2] Budiyanto, M. A. K., Lud, W. & A. Mokhtar. 2016. Implementasi Pendekatan Saintifik dalam Pembelajaran di Pendidikan Dasar di Malang. *Proceeding Biology Education Conference*. Universitas Muhammadiyah Malang. (Online). <https://bit.ly/3jtKJpc> [diakses pada tanggal 22 Juli 2020]
- [3] Circular Number 4 of 2020 on the Implementation of Education Policies in an Emergency for the Spread of CoronaVirus Disease (COVID-19).
- [4] Djuanda, D. 2010. *Penilaian dalam Pembelajaran Bahasa Indonesia di Sekolah Dasar*. Sumedang: Universitas Pendidikan Indonesia. (online). <https://bit.ly/37p3PbR> [diakses pada tanggal 16 Desember 2020]
- [5] Kemendikbud. 2015. *Kebijakan dan Dinamika Perkembangan Kurikulum 2013*. Jakarta: Badan Penelitian dan Pengembangan Kementerian Pendidikan dan Kebudayaan Republik Indonesia.
- [6] Marjan, J. 2014. *Pengaruh Pembelajaran Pendekatan Saintifik terhadap Hasil Belajar Biologi dan Keterampilan Proses Sains Siswa Ma. Mu'llimat Nahdlatul Wathan Pancor Tahun Pelajaran 2013/2014*. Tesis. Singaraja: Pasca Sarjana Undiksha.
- [7] Masyhud, S. M. 2016. *Metode Penelitian Pendidikan*. Edisi Kelima. Jember: Lembaga Pengembangan Manajemen dan Profesi Kependidikan (LPMPK).
- [8] Minister of Education and Culture No. 81A of 2013 attachment IV
- [9] National Education System Law No. 20 of 2016 concerning National Education Standards
- [10] Nugraha, M.S. 2015. *Pembelajaran PAI Berbasis Media Digital*. Bandung: Universitas Pendidikan Indonesia. (Online). <http://bit.ly/3akqTuw> [diakses pada tanggal 16 Desember 2020]
- [11] Rosyana, D. 2015. *Penerapan Strategi DRTA (Directed Reading Thinking Activity) untuk Meningkatkan Kemampuan Membaca Pemahaman Siswa*. Bandung: Universitas Pendidikan Indonesia. (Online). <https://bit.ly/34CbW3l> [diakses pada tanggal 16 Desember 2020]
- [12] Sari, A.W. 2016. Pentingnya Keterampilan Mendengar dalam Menciptakan Komunikasi Yang Efektif. *Jurnal Edutech Vol.2 No.1*. (Online). <https://bit.ly/3oS4h8C> [diakses pada tanggal 16 Desember 2020]
- [13] Siregar, M.R. 2014. *Upaya Meningkatkan Kemampuan Menyimak Cerita Menggunakan Media Wayang Kartun Binatang pada Siswa Kelas V SD Negeri Cidadap 01 Tahun Pelajaran 2013/2014*. Purwokerto: Universitas Muhammadiyah Purwokerto. (Online). <https://bit.ly/2Kyqvh6> [diakses pada tanggal 16 Desember 2020]
- [14] Sumarhati, T. 2017. *Analisis Evaluasi Pembelajaran Tematik di Kelas Rendah Sekolah Dasar Negeri*. Pontianak: Universitas Tanjungpura. (Online). <https://bit.ly/35sYEFz> [diakses pada tanggal 04 April 2020]