

Community Technology Science Approach to Improve Results of Science Learning in Elementary School

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Abstract—This study aims to improve the learning outcomes of science using the Community Technology Science approach. Preliminary data show the results of fourth grade science learning at SD GMIM I Tomohon have not yet achieved the expected learning goals, because students tend to be passive and lack enthusiasm in learning. The research method uses Classroom Action Research (CAR) which consists of 4 stages, namely: 1) Planning, 2) Implementation, 3) Observation 4) reflection. Data collection techniques through evaluation (test), observation and interviews, and actions carried out in 2 cycles. The results showed that in the first cycle the average student learning outcomes were 74.16%, while in the second cycle there was an increase in learning outcomes in the second cycle reaching 83.33%. The use of the Science Technology Society (STM) approach to science learning is able to activate and motivate elementary school students in learning science, because what they learn can be directly practiced and beneficial directly in everyday life.

Keywords—community technology science approach, elementary school.

I. INTRODUCTION

Improving the quality of education especially in elementary schools is the focus of the government's attention in order to improve the quality of human resources (HR) in Indonesia. Elementary School is the first formal unit that is responsible for developing characteristics and competencies and contributing positively in the field of science and skills. Since elementary school various abilities of students must be able to be empowered to the fullest, so that later on students are able to access more advanced knowledge.

The Science Technology Society approach is a learning approach that basically discusses the application of science in the context of daily life. Therefore, the Science Technology Society (STM) approach is referred to as an integrated approach between science and technology issues in society. With this approach students are coordinated to be willing and able to apply science principles to produce simple technological work [2].

The STM approach is a translation of the science technology and society approach (STS) which is learning that is developed based on constructivism philosophy. This learning approach was developed in America and Britain in the early 1970s. The new STM approach was introduced in Indonesia in the early 1990s, which was

tested and implemented in various schools in Indonesia, including at the elementary school level.

The STM approach in the view of the social sciences and the humanities, basically provides an understanding of the relationship between technology science and society while training the sensitivity of student assessment of environmental impacts as a result of the development of science and technology. Thus, technological science in people's lives, especially the world of education, has a close relationship.

The close relationship between technological science occurs because science basically explains the concept. Meanwhile, technology is an art / skill as an embodiment of concepts that have been learned and understood. With another expression to understand science and technology, there must be the ability to overcome problems by using scientific concepts, knowing the technology that exists in society and its impact, being able to use and maintain technological results, be creative in making simple technological results, and be able to make decisions based on values that apply in society [8].

Real conditions in elementary schools, such as at SD GMIM I Tomohon, show the situation of science learning is still too oriented to understanding the substance of matter. Teachers are still too referring to the material from the book, without any innovation to condition the class to be more dynamic, or direct student activities that can be continued in daily activities. This situation certainly makes it difficult for students to be motivated to be able to apply what is learned to be used in their lives.

There needs to be innovative actions from the teacher to be able to change the learning situation to be more dynamic and beneficial for students. One solution that can be done is by applying the science learning approach, namely the Technology and Community Science approach. This approach will bring students to learning science materials that can be directly connected with daily events and activities.

II. METHOD

The research method was carried out in the form of Classroom Action Research (CAR) [1], covering four stages, namely: (a) planning, (b) action, (c) observation, and (d) reflection. These stages are carried out in 2

cycles / rounds. The research subjects were the fifth grade students of SD GMIM I Tomohon which numbered 26 students. Data is taken through observation, and analysis of student work results, then calculates the average value of students and the percentage of success achieved. By calculating the percentage of completeness of learning, the criteria and measures of success in this classroom action research are complete learning every student completes his study if the proportion of answers is correct \geq (greater or equal to) 75% (Trianto, 2010: 64)

III. RESULT AND DISCUSSION

Cycle I

From the data above, the percentage of student learning completeness in this first cycle can be obtained as follows:

$$KB = 1,645 / 2400 \times 100\% = 68.54\%$$

From the results above, it can be seen that the learning completeness obtained from student learning outcomes is 68%. The results achieved have been good but have not reached the set standard of completeness which is 75% so there needs to be improvement. In learning activities, the teacher is seen not to explain too much about the relationship between subject matter and the activities of students in their daily lives. Students are also still carried away with the teacher's explanation. But the class situation is more dynamic and there are tough discussions.

Cycle II

While in cycle II, the following results are obtained:

$$KB = 2,025/2400 \times 100\% = 84.37\%$$

From the results above, it can be seen that the learning completeness obtained from student learning outcomes is 84%. The results achieved are good and have reached the standard of completeness set at 75% so that the learning objectives can be achieved optimally. The results in this cycle are able to be achieved because the teacher is able to explain some daily activities related to the subject matter. The teacher is able to bring understanding of students' concepts by giving examples of community activities in the environment where students live. Students are seen to better understand the material when the teacher explains the example.

In teaching and learning activities in the first cycle, student learning completeness only reached 68.54%, this was because group members had not been actively involved in presenting their findings to teachers and classmates. Teachers did not motivate students in learning and had not used examples of community activities a day days so that the impact on learning outcomes of students who are still lacking in achieving classical learning completeness is more than or equal to $\geq 75\%$.

The teacher's role is very important in pursuing a learning process that is more meaningful and can

improve student learning outcomes. For that teacher should give more opportunities to students to do, try and experience their own learning knowledge, and help students to be more courageous in presenting their findings to people others in this case are teachers and classmates. The teacher as a facilitator, mediator, and also motivator for students, so students are more independent and more appreciative of the knowledge gained by themselves through learning [3].

In the second cycle student learning outcomes have increased from 68.54% in Cycle I to 84.37%. This increase is because students are actively involved in the learning process and utilize information that connects students' daily activities with subject matter well so that students are more understand the material provided.

Thus, conceptually and in its implementation, the STM approach can be linked to the assumption that science, technology, and society have reciprocal, mutually content, interdependent, mutual influence and support in bringing together the demands of human needs and making people's lives better and easy. The STM approach to science learning emphasizes efforts to link science knowledge with technological problems and the community and its implications in everyday life [2].

The STM approach is able to involve students and teachers in setting goals, implementation procedures, information seeking and evaluation. Through an STM approach the teacher has an important role in shaping students to acquire knowledge and skills. This is needed so that students can make a decision that is responsible for social issues, especially issues related to science and technology.

IV. CONCLUSION

From the results of the implementation of the actions carried out, it can be concluded that the Application of the Science and Community Science Approach can improve the science learning outcomes of elementary school students. Although the first cycle percentage of student learning outcomes only reached 68.54%, but in the second cycle increased 84.37%. The increase in student activity in the learning process because they are able to understand the material more realistically because the teacher is able to give a real connection with the issues that are happening in the community where students are located. It turns out that by applying the Technology and Community Science Approach, it is able to make the learning atmosphere more realistic, interesting and bring students to get better learning outcomes.

REFERENCES

- [1] Aqib Zainal, 2006. *Penelitian Tindakan Kelas Untuk Guru*. Bandung: Yrama Widya.
- [2] Asyari, 2006:62. Penerapan Pendekatan Sains Teknologi Masyarakat dalam Pembelajaran IPA di SD. Jakarta: Depdiknas.
- [3] Djamarah dan Zain. 2006. Strategi belajar mengajar. Jakarta: Rineka Cipta.

- [4] Koestantoniah. 2000. Upaya Peningkatan Proses Pembelajaran IPA di Sekolah Dasar, dalam Edukasi Januari-Juni 2000 edisi 01 Tahun XI, h. 74.
- [5] La Maronta Golib. 2002. Pendekatan Sains Teknologi Masyarakat Dalam Pembelajaran Sains di Sekolah, Jurnal Pendidikan dan Kebudayaan No. 034 Tahun ke-8, Januari 2002, h. 43
- [6] Mudjiono. 2006 Belajar dan Pembelajaran. Jakarta : Rineka Cipta.
- [7] Poedjiadi, Anna. 2010. Sains Teknologi Masyarakat. Bandung: Remaja Rosdakarya
- [8] Prayekti. 2009. Pendekatan Sains Teknologi Masyarakat Tentang Konsep Pesawat Sederhana Dalam Pembelajaran IPA Di kelas 5 Sekolah Dasar , Jurnal diakses tanggal 22 Januari 2009, h. 3. diakses dari: <http://www.depdiknas.go.id/jurnal/39/pendekatan%20sains%20teknologi.htm>
- [9] Wahab. A. A. 2007. Metode dan Model-model mengajar. Bandung: Alfabeta.