Journal of Primary Education
9 (2) (2020) : 186–192

https://journal.unnes.ac.id/sju/index.php/jpe

Implementation of Problem Based Learning Assisted with Science Comic Books to Improve Critical Thinking Skill of Elementary Students

Yoga Pria Kurnia✉, Sri Susilogati Sumarti, Udi Utomo

Pascasarjana, Universitas Negeri Semarang, Indonesia

Article Info

History Articles
Received:
December 2019
Accepted:
January 2019
Published:
Maret 2020

Keywords:
Critical Thinking, Comic Book, PBL

Abstract

This research aims to improve students' critical thinking skill using Problem Based Learning assisted science comic book media. This is a Classroom Action Research (CAR) with 2 cycles. The research subjects were 29 students in VB class of State Primary School (SPS) 1 of Todanan. The research data were obtained through observation and tests of critical thinking skill. Based on the observation result, student's critical thinking skills have increased on: (1) elementary calarification by 15%; (2) basic support by 17%; (3) inference by 8%; (4) advanced clarification by 8%; (5) strategies and tactics by 11%. The result of test on critical thinking skill in cycle 1 was 62.06% of the passing grade. In cycle 2, it classically increased by 79.29%. Based on the data analysis, it was concluded that Problem Based Learning assisted with science comic book media can be used to improve the critical thinking skills of VB students of SDN 1 Todanan.

✉ Correspondence address:
Jalan Kelud Utara III, Petompon, Gajahmungkur
E-mail: yyoger@gmail.com

p-ISSN 2252-6404
e-ISSN 2502-4515

INTRODUCTION

Building qualified human resources who can answer every challenge in the development of science and technology is one of the important components developed in nowadays Indonesian education, especially in the 2013 Curriculum. The Acts of the Republic of Indonesia Number 20 of 2003 concerning the National Education Systeme states that education is a conscious and planned effort to create a learning atmosphere and learning process so that learners actively develop their potential to have spiritual-religious power, self-control, personality, intelligence, noble character, as well as the skills required by themselves, society, nation, and country.

In line with the Acts, developed skills should refer to the current development, especially the 21st century. According to Redhana (2012), teachers should make a move from a teaching method that emphasizes low-level thinking skills to learning that emphasizes higher-order thinking skills or critical thinking skills.

Related to critical thinking skills, Putra *et al.* (2018) state that critical thinking includes actions to evaluate situations, problems or arguments, and selecting investigative patterns that produce the best answer that can be obtained. In line with this statement, Hidayah *et al.* (2017), also argues that the ability to think critically is an ability which includes the activities of analyzing, interpreting, evaluating, summarizing, and synthesizing all information and using it in solving important problems. Furthermore, Anggareni *et al.* (2013) also say that critical thinking is important in the learning process because these skills provide opportunities for students to learn through discovery. Critical thinking skill is the heart of the future of all societies throughout the world.

Based on the description stated previously, the ability to think critically will be very important for students to have in order to understand the subject matter in depth. Therefore, teachers must be able to develop students' critical thinking skills in the learning process.

The low level of critical thinking skills is not the only problem faced by national education. The low quality of learning provided by teachers today is also one of the root problems experienced by national education. This can easily be found when we observe many primary schools. Although the government now has encouraged all teachers to teach with a scientific approach, some teachers ignore this suggestion and continue to implement teacher-centered learning. As we all know, that the best possible learning is student-centered learning.

In addition, another problem that contributes to the low quality of learning is the minimal use of the learning model and media to foster student interest. The use of appropriate media will have a very positive impact on the continuity of learning. This problem can be overcome by applying learning models and media that can help students to actively participate in learning. One of the ways is to apply the Problem Based Learning (PBL) assisted with science comic book media.

PBL approach is a learning approach based on problems where the teacher should link existing problems in student life with the learning, so students can feel the benefits of learning and gain new knowledge that is more tangible. Problems raised in the teaching and learning activities have a variety of open-ended answers. It aims to make the students be able to openly think about all existing problems and be actively involved in investigating problems in the learning.

According to Danial (2010), PBL is a learning strategy where the students are encouraged to work on authentic problems with a view to construct their own knowledge. In line with this opinion, Sumitro *et al.* (2017) reveal that the PBL model is a learning model that provides authentic experiences that encourage students to actively learn and construct knowledge. Therefore, applying the PBL is hoped to stimulate the students to be more motivated to participate in learning. The use of the PBL model combined with science comic

book media certainly can provide added value in developing students' critical thinking skills.

Comic books are often identified with entertaining or amusing readings, which can be read at any time without draining the reader's mind and energy. According to Nurgiyantoro (2013), the original word for comic is taken from the Dutch "komiek" which means a comedian, or it can also be from the ancient Greek language "comos" which is a word derived from "cosmos" which means to rejoice or to joke. Referring to the previous description, it is hoped that comic books will be able to help students overcome problems in learning.

Based on the description above, a research was conducted to analyze the implementation of Problem Based Learning model assisted with science comic book media to improve students' critical thinking skill of Class V of SDN 1 Todanan.

METHODS

This research is a Classroom Action Research (CAR) with McTaggart dan Kemmis model. According to Asminarti (2013), it states that action research is a research carried out in the form of actions aimed at changing towards a better direction. This CAR aims to improve students' critical thinking skill using Problem Based Learning assisted with science comic book media. The procedures and steps in this classroom action research follow the model by Kemmis and McTaggart quoted from Soesatyo *et al.* (2017) who developed a cycle consisting of planning, action, observation, and reflection stages. This classroom action research is designed in Figure 1.

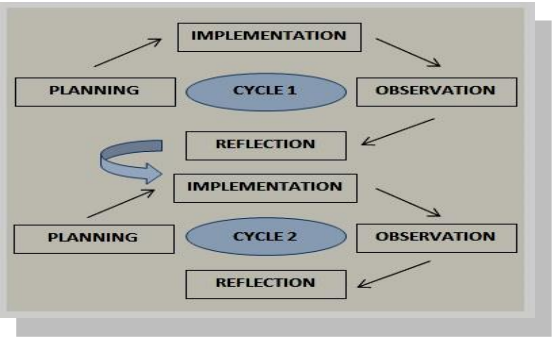


Figure 1. Classroom Action Research Design

Based on Figure 1, there are details of the activities carried out in this classroom action research: (1) planning that is the state of designing the learning scenarios, in this case is preparing lesson plans (RPP); (2) implementation that is the state of giving treatment; (3) observations to observe student learning processes; (4) and reflection that is the process of analyzing and assessing all data or information obtained at the time of the research.

The aspects of critical thinking skill measured include: providing elementary clarification; building basic support; inferencing; and managing strategies and tactics (Ennis, 2015).

The subjects of this research were 29 students of class VB of SDN 1 Todanan, consisting of 14 male students and 15 female students. The research was conducted in 2 cycles, with 2 meetings in each cycle. The research used thematic learning on Theme 8 Subtheme 2 Lesson 1 and 2. The learning instruments consisted of syllabus, lesson plans, student's worksheet, and teaching materials, while the research instrument consisted of observation sheets and test questions on critical thinking skill. The data collection techniques used were test technique in the form of questions on critical thinking skill and non-test technique consisting of observation and documentation.

Comparative descriptive analysis was used as the data analysis technique for quantitative data that compares the initial condition test score, test scores after the 1st cycle, and test scores after the 2nd cycle. Where as for the qualitative data, qualitative descriptive analysis was used based on the observations and reflections from each cycle. In the quantitative data analysis, student's critical thinking skill test results were calculated individually and as a whole using a percentage based on the increasing student's mastery. The requirement for passing indicator in this research is at least 75% students reaching the minimum passing score (KKM) of 70. Individual passing indicator is reached when a student meets the minimum passing score of 70, therefore every student will undergo a tes in order to assess it.

RESULTS AND DISCUSSION

The implementation of the research cycle 1 and 2 was done by applying Problem Based Learning model assisted with science comic book. The steps of Problem Based Learning model include: teacher introduction; exploration; explanation; extension; and evaluation (Capraro, 2013). The science comic book used as media in this research is shown by Figure 2 and 3.

Figure 2. Science Comic Book Cover

Figure 2 shows the cover of a science comic book. There are several components which consist of, front cover, book shoulder, and back cover. On the front cover, there is a book title that is adjusted to the contents of the media comic book and theme material 2 "Udara Bersih Bagi Kesehatan", image of the main character contained in the media comic book, background by following the theme of clean air, the identity of the author, grade level, and the agency that houses the author. Then on the shoulder of the book, there is the name of the author, title of the book, grade level, and the symbol of UNNES. While on the back cover, there is a review from the science comic book media. Next, the content of science comic book can be seen on Figure 3.

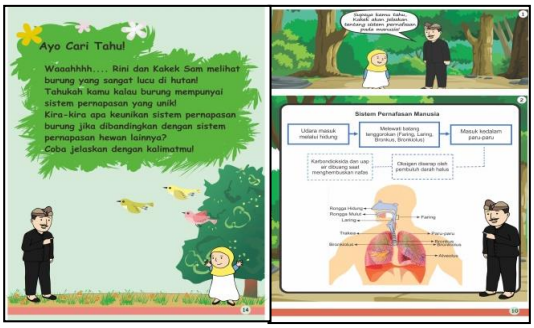


Figure 3. Science Comic Book Contents

Figure 3 shows the contents section of a science comic book consisting of stories, learning materials, and also problems that students can work on. The contents of the science comic book are adjusted to the level of development and indicators of students' critical thinking skills. Therefore this comic book media is suitable to be used as a companion PBL model. The science comic books used as the research media are designed based on students' needs and refer to contextual problems that are expected to help students to improve their critical thinking skills. After the planning and implementation stages of the learning process using PBL models assisted by science comic book as media, it is found the result of students' critical thinking skill as follows.

Student's Critical Thinking Ability Based on Observation Result

At the observation stage, the researcher observed the students' learning process that can be seen in the following Figure 4.

Figure 4. Observing Students' Learning Process

Based on the observation, it is found that student's critical thinking skill in cycle 2

increased when compared to cycle 1. The passing indicator of student's critical thinking skill in cycle 1 and 2 is presented in Table 1.

Table 1. The Passing Indicator of Student's Critical Thinking Skill

Indicator	Passing Indicator (%)	
	Cycle 1	Cycle 2
Elementary Clarification	60	75
Basic Support	40	57
Inference	43	51
Advanced Clarification	31	39
Strategies and Tactics	33	42

Based on the analysis of the indicators, it is found that student's critical thinking in cycle 1 has increased in cycle 2. The increase includes: (1) elementary clarification by 15%; (2) basic support by 17%; (3) inference by 8%; (4) advanced clarification by 8%; (5) and strategies and tactics by 11%. Based on the observation, it can be concluded that the implementation of Problem Based Learning (PBL) models assisted with science comic book media could improve students' critical thinking skill.

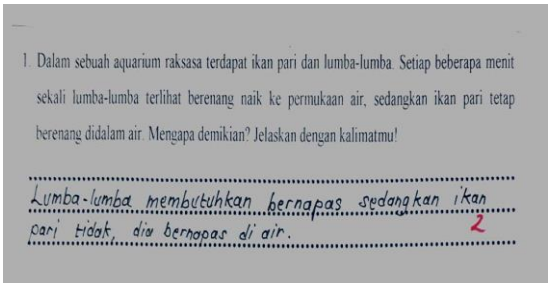
Student's Critical Thinking Ability Based on Test Result

After conducting observation, further data was taken using a test instrument. In the data collection with test instrument, a minimal passing score of 70 was predetermined, which must be achieved by at least 75% of the total number of students. The data of student's critical thinking skill test result in cycle 1 is presented in Table 2.

Table 2. The Test Result on Critical Thinking Skill in Cycle 1

Category	Frequency	Percentage (%)
Pass	18	62
Not Pass	11	38
Total	29	100

Based on the test result on student's critical thinking skill in cycle 1, there are 18 students (62%) reaching the minimum passing score while the rest doesn't pass the minimum score. Figure 5 shows an example of student's answer in cycle 1.


1. Dalam sebuah aquarium raksasa terdapat ikan pari dan lumba-lumba. Setiap beberapa menit sekali lumba-lumba terlihat berenang naik ke permukaan air, sedangkan ikan pari tetap berenang didalam air. Mengapa demikian? Jelaskan dengan kalimatmu!

Lumba-lumba membutuhkan bernapas sedangkan ikan pari tidak, dia bernapas di air. 2

Figure 5. Student's Answers in Cycle 1

Based on the analysis of Figure 5, it is found that students in cycle 1 could not provide answers that reflect critical thinking. It can be seen in question number 1 that reads "In a giant aquarium there are stingrays and dolphins. Every few minutes dolphins are seen rising to the surface while stingrays remain in the water. Why is that? Explain!" And the student answer "Dolphins need to breathe while stingrays don't. He can breathe in the water". This shows that students did not analyze the test questions given by researchers. Therefore, the researcher considers that it is necessary to conduct cycle 2. Furthermore, the data of student's critical thinking skill test result in cycle 2 is presented in Table 3.

Table 3. The Test Result on Critical Thinking Skill in Cycle 2

Category	Frequency	Percentage (%)
Pass	23	79
Not Pass	6	21
Total	29	100

Based on the test result in cycle 2, there are 23 students (79%) who reach the minimum passing score. It indicates that students' critical thinking skill has increased. Figure 6 below presents the example of student's answer in cycle 2.

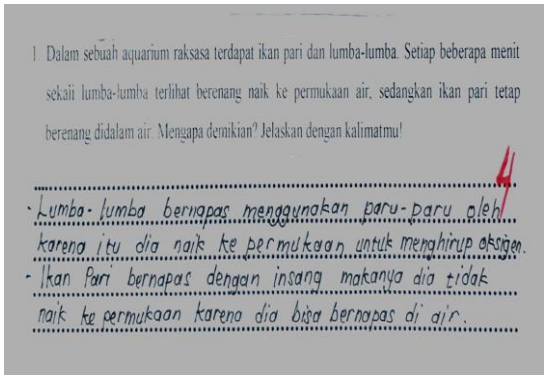


Figure 6. Student's Answers in Cycle 2

Based on the results of the analysis in Figure 6, determine students give better answers. Especially in the example problem number 1 which reads "In a giant aquarium there are stingrays and dolphins. Every few minutes dolphins are seen rising to the surface while stingrays remain in the air. Why is that? Explain!" And students answer "Dolphins need lungs, so they rise to the surface to breathe oxygen. Stingrays are comfortable using gills because they can calm in the air" This shows that the student's critical thinking skill in cycle 2 has increased. Furthermore, the achievement of critical thinking skills in cycle 2 also meets the minimum requirements determined by the researcher. These results indicate that cycle 2 is effective and does not require to proceed to cycle 3.

Based on the analysis of test results in cycle 1 and 2, the learning process implementing Problem Based Learning model assisted with science comic book media has proven to be effective in improving students' critical thinking skill. The data on the increase in students' critical thinking skill based on the passing test score is presented in Table 4 below.

Table 4. The Test Result on Critical Thinking Skill in Cycle 1 dan 2

Category	Percentage of passing (%)		Gain Score (%)
	Cycle 1	Cycle 2	
Pass	62	79	17

Based on the analysis in Table 4, the results of the critical thinking skill test in terms of the achievement of minimum passing score, it classically increase by 17% from the original 62% to 79%. The percentage of students passing indicator has met the minimum requirement determined by the researcher, which is 75%. Another finding in the analysis is that the implementation of PBL model assisted with science comic book media has proven to be effective in improving students' critical thinking skill.

CONCLUSION

Based on the result of classroom action research conducted by the researcher on the fifth grade students of SDN 1 Todanan, it can be concluded that the implementation of Problem Based Learning (PBL) models assisted with science comic book media could improve students' critical thinking skill. This is proven with the results of student tests and observations that increased in each cycle after learning by applying PBL model assisted with science comic book media.

Based on the observation result, students' critical thinking skills have increased, as viewed from the percentage of the achievement of several indicators, including: (1) elementary calarification increased from cycle 1 to cycle 2 as much as 15%; (2) basic support increased from cycle 1 to cycle 2 as much as 17%; (3) inference increased from cycle 1 to cycle 2 as much as 8%; (4) advanced clarification increased from cycle 1 to cycle 2 as much as 8%; (5) and strategies and tactics increased from cycle 1 to cycle 2 as much as 11%.

Based on the test result on critical thinking skill in cycle 1, 62% students have achieved the passing indicator. In addition, the test result on critical thinking skill in cycle 2 increased by 17%, hit a total of 79%. Referring to these statements, it could be concluded that the research conducted by the researcher is successful and meets the requirement for passing indicator, *i.e.* at least more than or equal to 75% (≥75%) of the total students classically.

ACKNOWLEDGEMENTS

I would like to express my gratitude to my supervisor who has intensively helped me in completing this article until it is suitable for publication. I would also thank the principal, teachers, and all class V students of SDN 1 Todanan for giving me the opportunity to do this research.

REFERENCES

Anggareni, N. W., Ristiati, N. P., & Widiyanti, N. L. P. M. (2013). *Implementasi Strategi Pembelajaran Inkuiri terhadap Kemampuan Berpikir Kritis dan Pemahaman Konsep IPA Siswa SMP*. e-Journal Program Pascasarjana Universitas Pendidikan Ganesha Program Studi IPA Vol. 3, 2013.

Asminarti. (2013). Meningkatkan Kemampuan Makan Dengan Sendok Melalui Pendekatan Kontekstual Bagi Anak Tunagrahita Sedang. *E-JUPEKhu: Jurnal Ilmiah Pendidikan Khusus.* 1(2): 27-36.

Capraro, R. M., Capraro, M. M., & Morgan, J. R. (2013). *STEM Project Based Learning*. Rotterdam: Sense Publishers. 9(3): 51-58.

Danial, M. (2010). Pengaruh Strategi PBL Terhadap Keterampilan Metakognisi dan Respon Mahasiswa. *Jurnal Chemica.* 11(2): 1-10.

Hidayah, R., Salimi, M., & Susiani, T.S. (2017). Critical Thinking Skill: Konsep Dan Inidikator Penilaian. *Jurnal Taman Cendekia* 01(02): 127-133.

Nurgiyantoro, B. (2013). Sastra anak; Pengantar Pemahaman Dunia Anak. Yogyakarta: Gajah Mada University Press.

Putra, M., Mulyadi, H., & Ahman, E. (2018). Kemampuan Berpikir Kritis pada Mata Pelajaran Ekonomi Siswa SMA Negeri 1 Cikarang Pusat. *UTILITY: Jurnal Ilmiah Pendidikan dan Ekonomi.* 2(1): 10-18.

Redhana, I.W. (2012). Model Pembelajaran Berbasis Masalah dan Pertanyaan Socratik untuk Meningkatkan Keterampilan Berpikir Kritis Siswa. *Cakrawala Pendidikan.* 31(3): 351-365.

Soesatyo, Y., Soebroto, W.T., Sakti, N.C., Edwar, M., & Trisnawati, N. (2017). Pelatihan Penulisan Proposal Penelitian Tindakan Kelas (PTK) Bagi Guru Ekonomi Kabupaten Sidoarjo. *Jurnal Pemberdayaan Masyarakat Madani (JPMM).* 1(2): 162-178.

Sumitro H, A., Setyosari, P., & Sumarmi. (2017). Penerapan Model *Problem Based Learning* Meningkatkan Motivasi dan Hasil Belajar IPS. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*. 2(9): 1188-1195.