International Journal of Advanced Educational Research
ISSN: 2455-6157; Impact Factor: RJIF 5.12
Received: 24-04-2019; Accepted: 26-05-2019
www.educationjournal.org
Volume 4; Issue 4; July 2019; Page No. 81-84

Use of experimental methods with concrete media to improve science high level thinking skills students V SD gmim 37 karegesan

Elaine SM Rondonuwu[1], Deitje A Katuuk[2], Jeane M Mangangantung[3]
[1] Student of Master Program, Department of Primary Teacher Education, Postgraduate Program, Manado State University, Indonesia
[2, 3] Postgraduate Program, Manado State University, Indonesia

Abstract
The purpose of this study is to describe and analyze experimental methods with concrete media to improve higher-order thinking skills through the use of experimental methods with concrete media. In high-level thinking has a level of ability that is knowing (Knowing-C1), mamahami (Understanding-C2), applying (Applaying-C3), analyzing (Analyzing-C4), evaluating (Evaluating-C5), and creating (Creating-C6). Low-level thinking ability is still dominant in class V. This is evident when students get questions with a high level of thinking, namely levels C4 to C6, from 20 students only 2 students are able to answer with the right answer, but only levels C4 and C5 while the level questions C6 students still incorrectly answered. This situation shows that 80% of students do not have high-level thinking skills. This is not only encountered in the classical learning process but also in the evaluation results of students who do not reach the minimum completeness criteria (KKM) of 70%. The reason is that the learning process is still dominantly centered on the teacher, then the teacher does not use the right learning methods and media, and the teacher is accustomed to teaching and carrying out evaluations only to levels C1-C3. The presence of experimental methods with concrete media is a breakthrough to improve students' abilities high level thinking. Based on the description of the background of the problem, the limitation of the problem to be examined is, Use of experimental methods with concrete media to improve high-level thinking skills of fifth grade students of SD GMIM 37 Karegesan. From the table the results of student achievement through observation data in the learning process until the test questions think high levels of levels C4 to C6 have increased and completed. Initial data 59%, first cycle 63%, second cycle 73%. Thus the class action research is complete and successful. It can be concluded that the use of experimental methods with concrete media can improve the high-level thinking skills of science learning in human respiratory material in fifth grade students of SD GMIM 37 Karegesan Kalawat District, North Minahasa Regency.

Keywords: experimental method, concrete media, higher level thinking ability, science subjects

Introduction

In realizing quality education nationally, basic education becomes a barometer in increasing competence, with increasing students' thinking skills up to the stage of high-level thinking. In the description of Article 1 Item 1 of Law No. 20 of 2003 explained that education is essentially an effort to humanize, civilize and civilize human children. Education becomes very necessary as the main foundation in developing existing capabilities. The basic abilities of students must also be taken seriously where it is necessary to develop students' life skills personally to enter education at the secondary level. Education is also one of the determinants for building a civilized nation. Education requires a breakthrough in efforts to improve the quality of education. As an effort to improve high-level thinking skills is a breakthrough in learning where students have increased levels of thinking from C1 to C6.

Low-level thinking ability is still dominant in class V. This is evident when students get questions with a high level of thinking, namely levels C4 to C6, from 20 students only 2 students are able to answer with the right answers, but only C4 and C5 levels while C6 level questions students are still wrong in answering. This situation shows that 80% of students do not have high-level thinking skills. This is not only encountered in the classical learning process but also in the evaluation results of students who do not reach the minimum completeness criteria (KKM) of 70%. The reason is that the learning process is still dominantly centered on the teacher, then the teacher does not use the right learning methods and media, and the teacher is accustomed to teaching and carrying out evaluations only at the C1-C3 level. The presence of experimental methods with concrete media is a breakthrough made to improve the ability of students to think higher.

Based on the description of the problem, the title of this study is:

"The Use of Experimental Methods with Concrete Media to Improve Thinking Ability at the High Level of Science Subjects for Grade V Students of SD GMIM 37 Karegesan."

The research problem formulation is as follows.

1. What is the use of experimental methods with concrete media to improve high-level thinking skills in science subjects in class V SD GMIM 37 Karegesan?
2. How to improve high-level thinking skills through the use of experimental methods with concrete media to improve science subjects in class V SD GMIM 37 Karegesan.

The purpose of this study is as follows.

1. To describe and analyze experimental methods with concrete media to improve high-level thinking skills in science subjects in fifth grade students at SD GMIM 37

Karegesan.
2. To improve high-level thinking skills through the use of experimental methods with concrete media to improve science subjects in class V SD GMIM 37 Karegesan

Research Methods
The research method used in this study is Class Action Research (CAR) which refers to Kemmis and Mc Taggart (in Heris Hendriana & M. Afrilianto, 2017) [14], carried out through 2 cycles and in each cycle consisting of 4 stages, namely: 1) Planning, 2) Implementation, 3) Observation, and 4) Reflection.
The procedure in this study design uses Classroom Action Research (CAR). In the process of learning science using experimental methods and concrete media carried out in two cycles. In each cycle consists of: 1) Planning 2) Action 3) implementation 4) Observation / observation 5) Reflection. This cycle I reflection phase will be the basis for making improvements in the second cycle.
The research subjects, namely the fifth grade students of SD GMIM 37 Karegesan, amounting to 20 students consisting of 15 female students, 5 students. Every student has different abilities with breathing material learning material in humans. This research activity is carried out in the even semester of the 2018/2019 academic year, namely in January - March of 2019. The first month is the time of research in the field, followed by data processing and data analysis until the following month. This action research will be carried out at SD GMIM 37 Karegesan, Kauditan District, North Minahasa Regency.

Results and Discussion
Description of Initial Conditions
From the preliminary data on the achievement of high-level thinking, the researchers found that the lowest student score was 50. Meanwhile, the highest student achievement score was 75, meaning that there was 75%. This proves that it has not yet reached the KKM (minimum completeness criteria) where the value is 70% which is the standard used for science learning in class V students. Not complete 15 students, so this situation causes researchers to carry out research to improve high-level thinking skills.

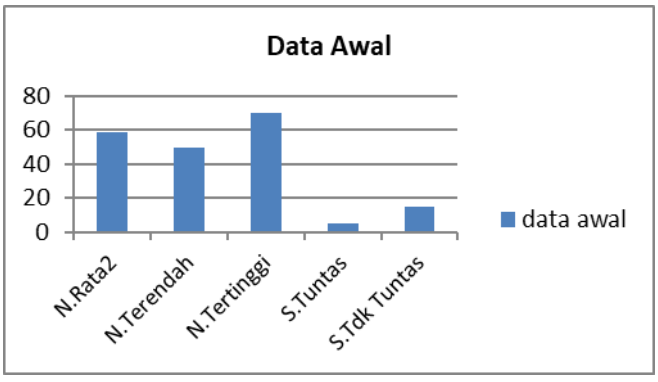

Fig 1: Initial Data Diagram of Learning Outcomes

Cycle I
In this study will be carried out using 4 (four) action research procedures in accordance with those presented by Kemmis and MC Taggart in Heris Hendrianan & M. Afrilianto (2017) [14]. The four stages are described to see the implementation process and the results of the research found during the action research carried out.

Cycle I Research Results
Here is a graph of the success rate.

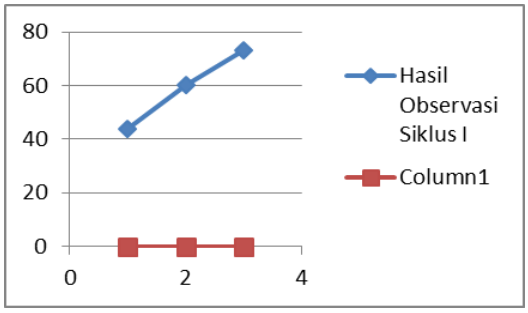

Fig 2: Figure Graph of Results of Observation of Student Activities

Based on the percentage of completeness of student learning outcomes in high-level thinking in the initial data 59% while the first cycle of data achievement of completeness was 63%. Based on the data in the first cycle there was an increase in the completeness of student learning outcomes when compared before using the experimental method with concrete media in class V SD GMIM 37 Karegesan in science learning. The success rate of students in high-level thinking skills has not shown improvement. It can be seen that the average value obtained is 63%, with the lowest value 50 obtained by 3 students, the value of 70 by 7 students, the value of 60 totaling 8 students, and 2 students getting the value 75. Based on the description of achievement of high-level thinking skills, the researcher found that the results were not significant and this was also seen in the following diagram diagram.

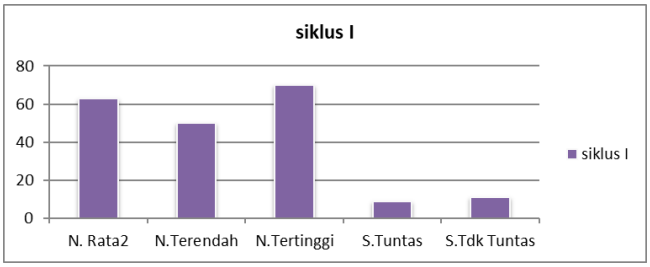

Fig 3: A High-Level Thinking Rod Diagram of Cycle I

Cycle II
Tin of the second cycle research results
The increase in completeness of observation of teacher Activities in the second cycle can also be seen through the Following line diagram:

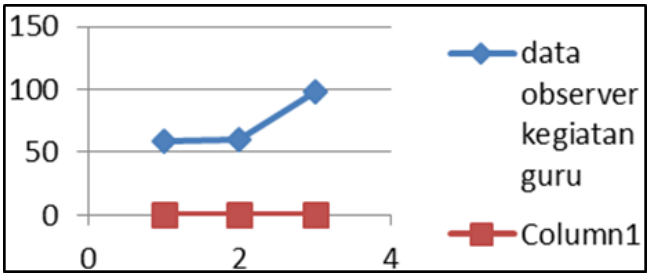

Fig 4: Line Diagram Observation of Cycle II Teacher Activities

The success rate of students in high-level thinking skills has shown an increase. It can be seen that the average value

obtained is 73%, with the lowest score of 70 obtained by 12 students, the value of 75 by 3 students, and 5 students getting the value of 80. Based on the description of achievement of high-level thinking abilities, the researchers found significant results this is also seen in the following bar diagram image.

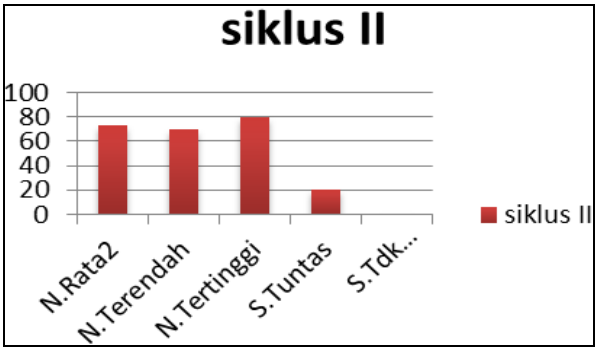

Fig 5: Pictures of Achievement Stem Diagram High Level Cycle II Thinking

Discussion

In this discussion the researcher will provide a discussion about increasing the high level of thinking in the second cycle of human respiratory material.

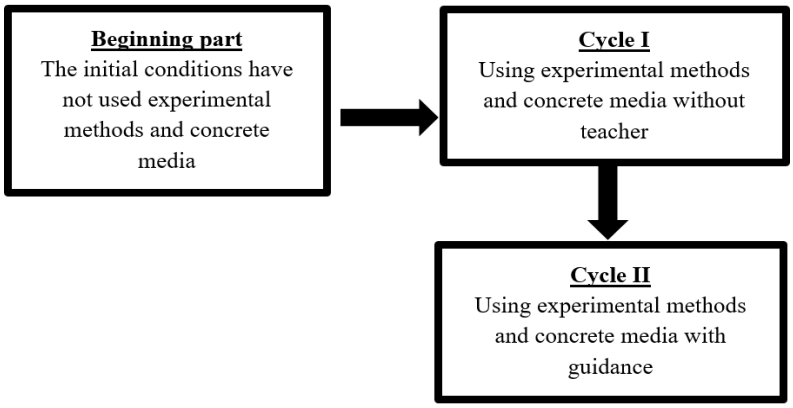

Fig 6

In the discussion column above shows an increase starting from the initial conditions of entry into the study in the first cycle to the second cycle in the material of breathing class V human at SD GMIM 37 Karegesan. The following is a data discussion on class action research.

Table 1: Outcomes of High Level Thinking Students

N0	Initial data (Pre Cycle)	Data Cycle I	Data Cycle II	Reflection
1	From the results of the tests conducted by the teacher on the semester exam students are only able to answer questions on level C1 to C3, so that 5 students who complete 20 students in percentage means only 25%. The lowest value obtained by students is 50 while the highest score of students is 75, meaning that there are 75%. This proves that it has not yet reached KKM (minimum completeness criteria) where the value of 70% is the standard used for science learning in class V students.	Based on the percentage of completeness of student learning outcomes in high-level thinking in the initial data 59% while the first cycle of data achievement of completeness was 63%. Based on the data in the first cycle there was an increase in the completeness of student learning outcomes when compared before using the experimental method with concrete media in the fifth grade students of SD GMIM 37 Karegesan in science learning.	In the second cycle there appeared to be an increase in high-level thinking. This can be seen in the table of achievement of high-level thinking test results reaching 73% with good titles. Thus, in cycle II students have experienced success and completeness based on KKM 70	In the second cycle there was an increase from cycle I to Cycle II, where there was an increase of 63% to 73%. From the data there were 20 students completed and 0 students did not complete. This increase shows that in cycle II the learning process is very active and successful.

From the table the results of student achievement through observation data in the learning process until the test questions think high levels of levels C4 to C6 have increased and completed. Initial data 59%, first cycle 63%, second cycle 73%. Thus, this class action research is complete and successful.

Conclusion

Based on the results of the research and discussion it can be concluded the following matters:

a. The use of experimental methods with concrete media can improve and improve the learning process of science in fifth grade students of SD GMIM 37 Karegesan by following the steps of the experimental method with concrete media.

b. The use of experimental methods with concrete media can improve high-level thinking skills in natural science learning materials for breathing in human class V students of SD GMIM 37 Karegesan.

References

1. Abdu M, Charul R. Pendekatan Ilmiah Dalam Implementasi Kurikulum 2013. Bandung: Remaja Rosdakarya, 2015.
2. Abazariant.http://abazariant.blogspot.com/2012/10/definisi-kognitif-afektif-dan-psikomotor.html di unduh, 2019.
3. Arikunto S. Dasar-dasar Evaluasi Pendidikan. Jakarta: Bumi Aksara. Jakarta, 2006.
4. Asih WW, Eka S. Metodologi Pembelajaran IPA. Bumi Aksara. Jakarta, 2017.
5. Astina R. https://kangmaszakki.wordpress.com/2017/09/23/taksonomi-bloom-ranah-kognitif-afektif-dan psikomotor/diakses 9/6/2019 pkl. 2015; 14:30.
6. Benny AP. Desain dan Pengembangan Program Pelatihan Berbasis Komputer: Implementasi Model Addie. Jakarta: Prenada Media Group, 2014.
7. Brookhart SM. How To Asses Higher Order Thinking Skills in Your Classr. Massachusetts: ASCD, 2010.
8. Carin A. Teaching Science Trough Discovery. NY: Macmillian Publishing Company, 1993.
9. Ega RW. Ragam Media Pembelajaran. Penerbit: Kata Pena, 2016.
10. Endang W. Winarni, 2018. Teori dan Praktik Penelitian Kuantitatif, Kualitatif, PTK, R&D. Jakarta : Bumi Aksara
11. Nugroho.2012__artikelpenelitian._https://media.neliti.com/media/publications/211924-penerapan-metode-eksperimen-dalam-pembel.pdf diakses 8/7/2019 pkl 22:30
12. Hamdani. Media Pembelajaran di Seikolah Dasar. Bandung: Alfabeta, 2005.
13. Hamruni. Strategi Pembelajaran. Yogyakarta: INSAN MADANI, 2012.
14. Heris H, Afrilianto. Langkah Praktis Penelitian Tindakan Kelas Bagi Guru. Bandung: PT. Refika Aditama, 2017.
15. Heri S Dkk, Pembelajaran IPA SD kelas IV Depdiknas 2008 Jakarta Penerbit CV Ar-Rahman Surakarta, 2008.
16. Hemawan AH dkk. Belajar dan Pembelajaran SD. Bandung: UPI Press, 2007.
17. Hosnan. Pendekatan Saintifik dan Kontekstual Dalam Pembelajaran Abad 21. Bogor: Ghalia Indonesia, 2014.
18. Ibrahim R, Syaodih Nana. Perencanaan Pengajaran. Jakarta: PT. Rinika Cipta
19. I Wayan Dasna. Penelitian Tindakan Kelas (PTK). Malang: PT. Pertamina (persero) dengan Universitas Negeri Malang, 2012.
20. Imam W. Pengembangan Pendidikan strategi inovatif dan kreatif dalam mengelola pendidikan secara komprehensif. Jakarta: PT. Prestasi Pustakaraya, 2012.
21. Jennah R. Media Pembelajaran. Banjarmasin: Antasari Press, 2009.
22. Kelvin S. Pedoman Pembelajaran & Instruksi Pendidikan. Jogyakarta: IRCiSoD, 2012.
23. LPMP Sulut. Panduan Teknis Pembelajaran Dan Penilaian di Sekolah Dasar. Kurikulum 2013. Sulut Kementerian Pendidikan dan Kebudayaan, 2017.
24. M Rusdi. Penelitian Disain Dan Pengembangan Pendidikan (konsep, prosedur dan sintesis, pengetahuan baru). Depok: Rajawali Pers. PT. RajaGrafindo Persada, 2018.
25. Moh Y. Panduan Manajemen Mutu Kurikulum Pendidikan. Jogyakarta DIVA Press, 2012.
26. Mulyani S dkk. Media Pembelajaran. Jakarta: Rineka Cipta, 2004.
27. Muhammad R, Sofan A. Strategi dan Desain Pengembangan Sistem Pembelajaran. Jakarta: Prestasi Pustaka, 2013.
28. Nunuk S dkk. Media Pembelajaran Inovatif dan Pengembangannya. Bandung. PT Remaja Rosdakarya, 2018.
29. Paul S SJ. Metode Penelitian Pendidikan IPA. Universitas Sanata Dharma. Yogyakarta, 2014.
30. Permendikbud No 22 Tahun Tentang Standar Proses, 2016.
31. Pipit P A. Hots Berbasis PPK dalam Pembelajaran Tematik. Penerbit Pustaka Mediaguru. Surabaya, 2018.
32. Purwanto. Evaluasi Hasil Belajar. Yogyakarta: Pustaka Pelajar, 2009.
33. R Arifin N. HOTS Higher Order Thinking Skills. (kemampuan berpikir tingkat tinngi. Konsep. Pembelajaran. Penilaian. Penyusunan soal sesuai.Jakarta. PT. Gramedia, 2018.
34. Sampaijumapalagi http://sampaijumapalagi.blogspot.com/2016/07/media-konkret-adalah.html diakses 8/6/2019 pkl, 07:05
35. Scharw G, Daniel RR. (Eds) Assessment of Higher Order Thinking Skills. USA: IAP-Information Age Publishing, Inc, 2011.
36. Sudjana N. Dasar-dasar Proses Belajar Mengajar. Bandung: Sinar Baru Alegensindo, 2005.
37. Sugiyono. Metode Penelitian Kuantitatif. Penerbit: Alfabeta. Bandung, 2018.
38. Sujadi. Metodologi Penelitian Pendidikan. Jakarta. Rineka cipta, 2003.
39. Sukmadinata N. Sy. Kurikulum dan Pembelajaran Kompetensi. Bandung: Kesuma Karya, 2004.
40. Sukmadinata NS. Metode Penelitian Pendidikan. Bandung: Rosdakarya, 2005.
41. Sumiati A, M.Ed. Metode Pembelajaran. 2008 penerbit CV Wacana Prima, 2008.
42. Soli Abimayu, dkk, Strategi Pembelajaran Direktorat Jenderal Pendidikan Tinggi Depdiknas, 2009.
43. Suparlan. Menjadi Guru Efektif. Yogyakarta: Hikayat, 2005.
44. Syasiful B Dj, Aswan Z. Strategi Belajar Mengajar. Jakarta: Rineka Putra, 2010.
45. Tim Penyusun profesionalisme guru Materi Pendidikan dan Latihan Profesi Guru Rayon 27 Universitas Negeri Manado, 2012.
46. Tim Penyusun. Penelitian Tindakan Kelas (PTK). Universitas Negeri Manado, 2012.
47. Vygotsky. Mind in Society. The Development of Higher Psychological Processes, 1978.
48. Wahyudi S, Roekhan. Pemberdayaan Guru Sekolah Dasar Petunjuk Pembuatan dan Penggunaan Media Pembelajaran Alternatif. Malang: Kerjasama PT. Pertamina dengan Universitas Negeri Malang, 2012.