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IMPLEMENTATION OF PRACTICUM-BASED SETS MODELS TO IMPROVE PRIMARY SCHOOL STUDENTS' UNDERSTANDING OF CONCEPTS

Zahirotun Nisa[1*], Din Azwar Uswatun[2], Astri Sutisnawati[3], Arsyi Rizqia Amalia[4]
[1,2,3,4]Universitas Muhammadiyah Sukabumi
[1]zahirotunnisa07@ummi.ac.id

Abstract
This research aims to describe the implementation of the SETS model in improving concept understanding and describe the increase in concept understanding after learning using the SETS model. The method used is Classroom Action Research (CAR), the design used is the Kemmis and Mc Taggart model, implemented in two cycles. Each cycle consists of planning, implementing actions, observing and reflecting. The participants in this research were 26 class V students at SDN 06 Cisande, consisting of 15 boys and 11 girls. Data collection techniques use observation and test techniques. The results of research on the application of the SETS model during the pre-cycle of teacher and student activities were 25% in the poor category. In cycle 1, teacher activities with an average score of 67% were in the good category, while student activities with an average score of 65% were in the good category. Then it increased in cycle II, teacher activity with an average score of 81 got the very good category and student activity with an average score of 80 got the very good category. The results of research on understanding pre-cycle concepts show completeness of 25%. Then it increased in cycle I to reach 50% completeness. Meanwhile, in cycle II, the results showed that completion reached 86%. Understanding of concepts taken from group practicum method scores, Pre-cycle UAS scores were only 25% in the good category, cycle I after applying the practicum-based SETS model was 58% in the quite good category. In cycle II it became 85% in the very good category. Based on these two cycles, it can be seen that there is an increase in teacher and student activity as well as students' understanding of concepts by implementing the practicum-based SETS model.
Keywords: *SETS; Practicum; Concept Understanding*

Abstrak
Penelitian ini bertujuan untuk mendeskripsikan pelaksanaan model SETS dalam meningkatkan pemahaman konsep dan mendeskripsikan peningkatan pemahaman konsep setelah pembelajaran menggunakan model SETS. Metode yang digunakan yaitu Penelitian Tindakan Kelas (PTK) desain yang dipakai yaitu model Kemmis dan Mc Taggart pelaksanaannya dua siklus. Setiap siklus terdiri dari perencanaan, pelaksanaan tindakan, pengamatan, dan refleksi. Partisipan dalam penelitian ini adalah peserta didik kelas V SDN 06 Cisande sebanyak 26 peserta didik, terdiri dari laki-laki 15 orang dan perempuan 11 orang. Teknik pengumpulan data menggunakan teknik observasi dan tes. Hasil penelitian pada penerapan model SETS saat prasiklus aktivitas guru dan peserta didik 25% mendapatkan kategori kurang baik, Pada siklus 1 aktivitas guru dengan nilai rata-rata 67% kategori baik sedangkan aktivitas peserta didik dengan nilai rata-rata 65% kategori baik. Kemudian meningkat pada siklus II aktivitas guru dengan nilai rata-rata 81 mendapatkan kategori sangat baik dan aktivitas peserta didik dengan nilai rata-rata 80 mendapatkan kategori sangat baik. Hasil penelitian pada pemahaman konsep pra siklus menunjukkan ketuntasan sebesar 25%. Kemudian meningkat pada siklus I mencapai ketuntasan sebesar 50%. Sedangkan pada siklus II, hasil menunjukan ketuntasan mencapai 86%. Pemahaman konsep yang diambil dari nilai metode praktikum secara kelompok, Prasiklus nilai UAS hasilnya hanya 25% kategori baik, siklus I setelah menerapkan model SETS berbasis praktikum menjadi 58% kategori cukup baik. Pada siklus II menjadi 85% kategori sangat baik. Berdasarkan kedua siklus tesebut digambarkan adanya peningkatan aktivitas guru dan peserta didik serta pemahaman konsep peserta didik dengan menerapkan model SETS berbasis praktikum.
Kata Kunci: SETS; Praktikum; Pemahaman Konsep

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Introduction

One important component in the world of education is the curriculum. The curriculum plays an important component in education, because it is related to determining the direction, content and process of education which ultimately determines the qualifications of graduates of an educational institution. The curriculum is dynamic because it always changes according to developments over time. The curriculum is also a learning guide to achieve educational goals. Fatirul & Walujo (2022) in (Cholilah et al., n.d.) stated that the curriculum is a learning plan in the context of an educational program created with the aim of educating students. This plan includes a variety of activities that support students' learning processes, so that they can produce positive changes and developments in students' behavior and skills in accordance with the stated educational goals. The importance of the curriculum in the educational context lies in its close relationship with the teaching and learning process. (Jihan et al., 2023; Santoso et al., 2023)

Education is an activity to increase knowledge through a learning system, for better knowledge in the future. Based on the National Library and Law No. 20 of 2003, students are defined as individuals who are part of society and actively seek self-development through the learning process provided in various pathways, levels and types of education. This statement states that by carrying out various learning processes people can develop their potential. Learning is a communication process between students and teachers in the school environment, this interaction process aims to obtain knowledge and knowledge for students. Malcolm Knowles believes that learning is a process in which a person gains a new or deeper understanding of something which can change his way of thinking (Sari et al., 2022). In elementary school, all subjects have the potential to provide new understanding, including Natural Science (Science) subjects.

Science (Natural Science) is a science that studies nature, animals, human organs, fruits, vegetables and all aspects related to biology, physics and chemistry. Science also teaches how all processes of natural phenomena occur which are arranged systematically based on the results of experiments and observations carried out. According to Ariyanto et al (2016) Students use Natural Sciences (IPA) to explore the relationship between humans and nature through observation and collecting natural concepts that are logically and systematically organized, with the aim of achieving new knowledge.

Science learning is always attached to practicum, practicum carried out by elementary school students usually uses simple tools and materials. Practicums in learning have various advantages, including providing students with experience in observing and understanding natural phenomena (Hasruddin & Rezeqi, 2012) in (Usmeldi & Amini, 2021). Learning science through practicum also helps students connect two domains of knowledge, namely the domain of real objects that can be observed and the domain of mental knowledge (Murniati & Yusup, 2015) in (Ramdhayani et al., 2022).

Learning activities cannot be separated from the learning assessment process. According to the definition quoted from the elementary school assessment guide, assessment is the process of collecting and analyzing information to assess student learning progress in various respects, including attitudes, knowledge and skills. (Directorate General of Primary and Secondary Education, 2016: 5) in (Julianto, 2022) To evaluate student knowledge, various assessment

techniques can be applied, including written, oral and assignment tests. In using written tests, teachers have the flexibility to provide various types of questions, such as multiple choice, true-false, matching, short answers, and descriptions. The questions can be structured with different weights, with some testing understanding at lower levels of thinking (LOTS) and others challenging students to think at higher levels (HOTs).

HOTS is a stage of thinking that reaches a higher cognitive level, which is formed from various cognitive concepts and approaches, including Bloom's taxonomy, learning, teaching and assessment taxonomy. (Saputra, 2016:91). High Order Thinking Skills are known from the concept of Benjamin S. Bloom in his book Taxonomy of Educational Objectives: The Classification of Educational Goals (1956). Bloom's taxonomy groups various levels of thinking, from the most basic to the most complex. High Order Thinking Skills (HOTS) is part of the cognitive domain of Bloom's taxonomy which aims to develop mental skills related to knowledge.

There are six levels of thinking processes: knowledge, understanding, application, analysis, synthesis and evaluation (Nurbudiyani, 2013). This research focuses more on the realm of understanding, where class V should be able to achieve a high level of understanding, in reality not all students have achieved a low level of understanding. According to PISA and TIMSS, the HOTS test of students is tested, and the test results obtained by Indonesia reflect that students in Indonesia have not yet achieved High Order Thinking Skills (HOTS) (Hartini et al., 2018)

One of the factors causing students not to reach HOTS is the lack of understanding of students' concepts in learning. This is the same as what researchers found in the field, that class V to SD has not yet achieved HOTS, which can be seen from the low scores of students at the UAS, only 25% of the total. students who can achieve the KKM score. Understanding concepts is the ability to understand material presented in a shorter form so that you are able to apply it in the learning process. According to (Kiki, 2017) The characteristic of students who have good concept understanding abilities is when they are able to show signs of concept understanding in tests. There are several indicators of concept understanding according to Sumarmo in (Rahayu & Pujiastuti, 2018), namely, (1) Restating a concept; (2) Providing examples (3) Developing requirements for a concept and (4) Applying the concept of problem solving.

The lack of research on elementary school students in applying the SETS model with practicum methods causes students' low understanding of concepts, so researchers try to apply the SETS model (Science, Environment, Technology and Society) model based on practicum methods. Practical activities in science are carried out so that students are more familiar with investigation and problem solving activities and can explore experiments in practical activities. Practical activities can develop psychomotor, cognitive and affective skills. Meanwhile, SETS is a concept that involves four interconnected elements, with a focus on science. SETS-oriented learning allows students to develop scientific understanding and gain in-depth understanding because learning is student-centered. In this learning, the knowledge that students have is connected with new knowledge. Learners invited to understand the problem in the context of four components, where science is the main focus and is related to the daily activities of society (society), as well as realizing that every human action has an impact on the surrounding environment (environment), and providing alternative solutions in the form of technology to overcome the impact of people's behavior on the environment (Julianto Swasta & Agro Lestari, n.d.).

The SETS domain according to (Poedjiadi Anna, 2019) is: (1) Concepts, facts, generalizations, taken from certain fields of science which are typical of each field of science. (2) Process, characterized as the most general way to obtain ideas or how to obtain ideas in a particular field of science. (3) Creativity includes five individual behaviors, namely: Fluency, Flexibility, Originality, Elaboration, Sensitivity. (4) Application of the concept in everyday life. The ability to "far transfer of learning" or the ability to transfer learning outside of school is a person's ability to transfer learning in the school environment to situations in society that are very complex. (5) Attitude, including realizing the greatness of God, appreciating the discoveries of researchers and inventors of technological products, but being aware of the possible negative impacts of technological products, caring for less fortunate communities and preserving the environment. (6) Tends to take part in carrying out real action if something happens in their environment that requires their participation. From the SETS domain that has been discussed, there is a process domain that is more appropriate in this research. The process domain is part of the domain that trains students' skills. They are expected to be accustomed to always designing the processes that need to be carried out to achieve scientific products, in research activities that will be carried out. carried out on a practical basis.

Advantages of the SETS Learning Model (Rohmatun & Rasyid, n.d.) (1) Students have the ability to view things in an integrated manner by paying attention to the four elements of SETS, so they can gain a deeper understanding of the knowledge they already have, (2) Train students to be sensitive to problems that are developing in their environment/relate to everyday life, (3) Students have concern for the surrounding environment or living systems by knowing science, its developments and how scientific developments can influence the environment, technology and society reciprocally. (4) Students become more active and creative in learning.

Meanwhile, according to Fatchan (2014), the advantages of the SETS learning model are (1) It can improve inquiry skills, solving skills and process skills, emphasizes good learning methods that cover the cognitive, affective and psychomotor domains, emphasizes science in integration and between fields of study. (2) If viewed from a learning perspective, emphasizing student success, it can be combined with various learning strategies, making teachers aware that sometimes they do not always function as a source of information. (3) If viewed from an evaluation perspective, there is a relationship between objectives, processes and learning outcomes, differences between skills, maturity and background of students and program functions are also evaluated (Widiantini at al, 2017). This conclusion was also experienced by students during the research process.

The results of observations and interviews with class V teachers at SDN 06 Cisande showed several problems during the learning process, one of the problems faced by teachers was the lack of supporting facilities, so that in the learning process in class teachers only used teacher books and student books and in delivering science material they should Practical teachers cannot convey the material optimally, because they only rely on books and apply conventional methods during the learning process, this reduces students' learning motivation when learning science, especially in understanding concepts. This research presents a number of new information for students and teachers where the researcher introduces the SETS learning model with a practicum method.

Research methods

This research uses the PTK (Classroom Action Research) method described by Kemmis and Mc Taggart. This research was conducted as a step to overcome challenges that arise in the classroom environment. This research aims to describe the implementation of the SETS model

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in improving concept understanding and describe the increase in concept understanding after learning using the SETS model. Classroom Action Research (CAR) is carried out with the aim of improving the quality of the learning process(Aisyah Nurkhasanah et al., n.d.) According to Komara and Mauludin (2016: 77) in (Dewi & Arnyana, 2020) this research method consists of four main steps, namely planning, action, observation and reflection. This research process is repeated several times until it reaches the expected goals. The main stages in PTK include problem identification, solution planning, implementation of planned actions through observation, and reflection through discussion to determine next steps. Below is the PTK model of Kemmis and Mc Taggart.

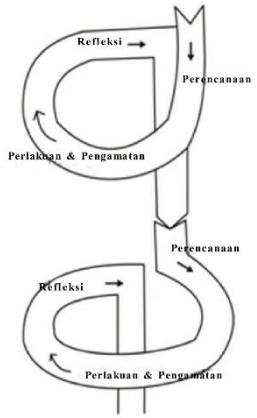

Figure 1. PTK model by Kemmis and Mc Taggart
(Wulandari & Lyesmaya, n.d.)

The PTK steps put forward by Kemmis and Mc Taggart include: (1) Planning is the initial stage in research, making a learning plan must be made based on the problems in the class and ensure that it can solve the problem. In the first step, the researcher conducted an interview with the class teacher regarding the existing problems, namely the low understanding of students' concepts in science subjects regarding the water cycle. (2) Action is the application of plans that have been made to overcome problems in the class. Actions must be in accordance with the structure of the learning plan. The second step the researcher took was implementing the practicum-based SETS learning model which had been approved by the class teacher in the form of lesson plans and research instruments. (3) Observation is the activity of observing students' activities and collecting the results of actions. In the third step, the researcher calculated the number of questions and the total score for each student obtained from step 2 (4). Reflection is an activity to discover the strengths and weaknesses of actions, identify obstacles and analyze the influence of the actions taken. The final step was for the researcher and the homeroom teacher to find weaknesses in cycle 1 and finally cycle 2 was carried out. The PTK process begins with a pre-cycle. Pre-cycle is the initial stage or preparatory phase before the start of cycle 1 with the aim of seeing what percentage of students have not achieved the grades determined by the teacher. After knowing the value of each new student, they can carry out cycle 1, cycle 2, and so on until the achievement value determined by the researcher has been achieved.

In this research, the number of class V students at SDN 06 Cisande, Sukabumi Regency was 26 people. Students in class V consist of 15 male students and 11 female students, writers and class teachers. Data collection techniques in this research are observation and tests.

Observation is a method of collecting information that is carried out by directly observing a particular object or behavior, then systematically recording the conditions or behavior observed. (Abdurrahmat, 2006:104) in (Firdiansyah, 2015) A test is a method or tool used to measure or assess something in a certain situation, in accordance with established guidelines or standards. (Arikunto, 2016) in research (Faza Ahmad, 2020)

After getting the value from data processing, it can be concluded by looking at the teacher activity categories by looking at the provisions in the table below (Pujo, 2019).

Table 1. the teacher activity categories

No	Score	Value Vulnerable	Category
1.	5	80-100	Very Good
2.	4	60-79	Good
3.	3	40-59	Enough
4.	2	20-39	Not Good
5.	1	<20	Not good

Results and Discussion

The results of applying the SETS model to water cycle science material to increase understanding of the concept were carried out for 2 cycles and each cycle was carried out in 1 learning day. In each cycle it increases. The pre-cycle can be seen from the results of the UAS science grades in the odd semester.

The implementation process in using the SETS model is divided into 2, namely teacher activities and student activities. The following are the results of the achievements.

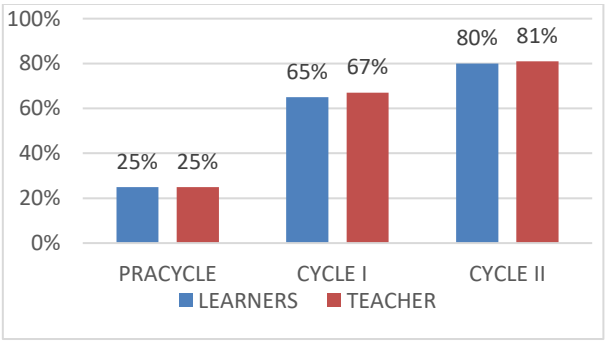

Figure 2. SETS Model Activities for Students and Teachers

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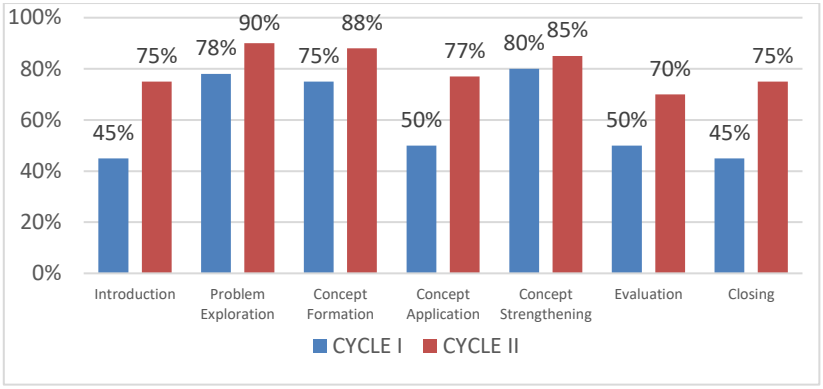

Figure 3. Activities for Each Student's SETS Model Indicator

The results of observing student activities in the picture above can be described as follows: (1) Introduction, a total of 11 students participated in the lesson in an orderly manner, actively apperception, paying attention to the learning objectives, there were still students who were disorganized, inactive and not paying attention. The students' ability in this stage obtained a percentage result of 45% in the quite good category. Students can participate in learning in an orderly manner, with active apperception, paying attention to the learning objectives. The students' ability in this stage obtained a percentage result of 75% in the good category. (2) Problem Exploration, 20 students grouped together and discussed in an orderly manner, listened and actively asked questions, there were still students who were serious about learning. The students' ability in this stage obtained a percentage result of 78% in the good category. Almost all students are serious and disciplined. The students' ability in this stage obtained a percentage result of 90% in the very good category. (3) Concept Formation, Students still joke around during the practicum process. The ability of students at this stage has a percentage of 75% in the good category. Students are more serious and focused when carrying out the practicum process. The ability of students at this stage has a percentage of 88% in the very good category. (4) Concept Application, A total of 13 students were not suitable in giving examples of the benefits of water in everyday life. The students' ability at this stage obtained a percentage result of 50% in the quite good category. Students can give examples of the benefits of water in everyday life. The students' abilities at this stage obtained a percentage result of 77% in the good category. (5) Concept strengthening, as many as 20 students actively asked questions about the material discussed. The students' ability in this stage obtained a percentage result of 80% in the good category. This increased to 22 students actively asking questions about the material discussed. The students' ability in this stage obtained a percentage result of 85% in the good category. (6) Assessment, a total of 5 student representatives from each group can present the results of the practicum, even if the results are from pointing fingers because there must be representatives. The students' ability in this stage obtained a percentage result of 50% in the quite good category. There are still 5 students representing each group who can present the results of the practicum, but the results are their own will to move forward. The students' ability in this stage obtained a percentage result of 70% in the good category. (7) Closing, a total of 11 students were active in making learning conclusions. The students' ability in this stage obtained a percentage result of 45% in the quite good category. A total of 19 students were able to make learning conclusions. The students' ability in this stage obtained a percentage result of 75% in the good category.

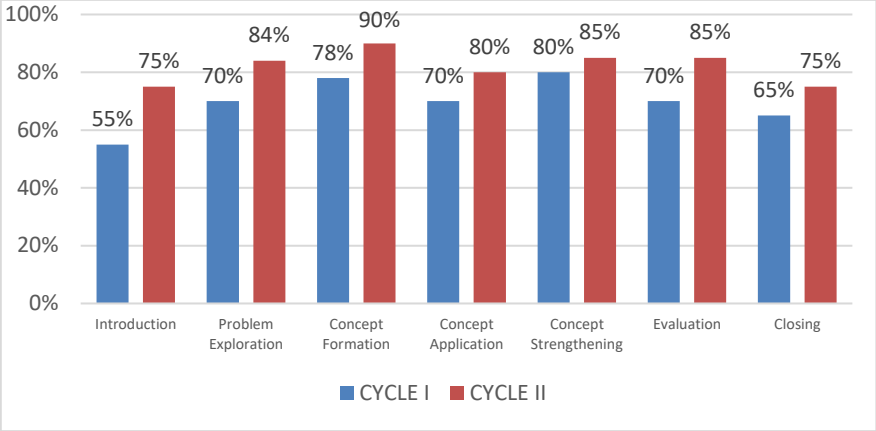

Figure 4. Activities for Each Teacher SETS Model Indicator

The results of observing the teacher's activities in the picture above can be described as follows: (1) Introduction, the teacher is not neat in preparing the initial activities. This stage obtains a percentage of 55%. The teacher was more neat and organized in delivering the initial activities at this stage, getting a percentage of 75%. (2) Exploration of the problem, the teacher is not strict about forming students into groups and showing learning videos using 1 cellphone per group makes some students not focus because the cellphone screen is small. At this stage, it reaches 70%. Teachers show a more assertive attitude when forming students into groups and showing learning videos using Infocus makes students more focused in digesting the material. At this stage, it reaches 84%. (3) Concept Formation, Teachers are less skilled when giving practical instructions. Teacher skills at this stage obtained results of 78%. Teachers are skilled in providing practical instruction. At this stage, you get a percentage result of 90%. (4) Concept Application, the teacher only gives 5 examples of the benefits of water in everyday life. The score for this stage is 70%. The teacher gives 10 examples of the benefits of water in everyday life. In this stage, get a percentage of 80%. (5) Concept strengthening, the teacher uses language that students do not understand when asking whether they understand the material that has been presented or not. At this stage it reaches 80%. Teachers use language that is understandable. The percentage of teacher success at this stage reached 85%. (6) Assessment, the teacher gives the same value to students who present and who do not. At this stage it reaches 70%. Teachers give greater marks to students who present than to those who do not present so their marks are not the same. In this stage, you get a percentage of 85%. (7) Conclusion, the teacher is not very good at conveying learning conclusions. At this stage it reaches 65%. The teacher conveys quite a lot of learning conclusions. In this stage, you get a percentage of 75%.

SETS-oriented learning allows students to develop scientific understanding and gain in-depth understanding because learning is student-centered (Julianto Swasta & Agro Lestari, n.d.) In this model, there are concepts and processes that enable students to investigate, analyze and apply these concepts and processes in the context of real situations (Fatchan et al., n.d.). The stages of SETS according to (Poedjiadi Anna, 2019), namely, Stage 1 Introduction: Initiation/Invitation/Apperception/Exploration of students, Stage 2 Concept Formation/Development, Stage 3 Application of concepts in life: problem solving or issue analysis, Stage 4 Concept consolidation, Stage 5 Assessment. The specificity of this learning model is that in Stage 1, it raises issues or problems that exist in society (Initiation), Invites students to focus on learning (Invitation), Processes new ideas with those already owned by someone (Apperception), which Lastly, the teacher assigns activities in the field in groups. Stage 2 can be carried out through various approaches and methods. This research will use practical

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methods and group discussions. According to (Suryaningsih, 2017) the practicum-based learning method is a way of presenting lessons, where students carry out experiments by experiencing and proving for themselves something they have learned, whereas according to Dyson & Casey (2016) stated that the group learning method can encourage interaction between students who have various type of intelligence. Thus, learning in the classroom becomes more dynamic and involves active interaction between students. Teachers do not only act as transmitters of material to students, because students are able to collaborate with their group of friends in completing the tasks that have been given(Dewi & Arnyana, 2020). Stage 3: After understanding the concepts, students are expected to be able to apply them in their daily lives. Stage 4 is concept consolidation where students must determine the concept that will be used to resolve the existing issue. Stage 5 determines the success or failure of a lesson, assessment is given in the form of a written test or verbal questions.

The implementation process in increasing students' understanding of concepts, the following are the results of the achievements.

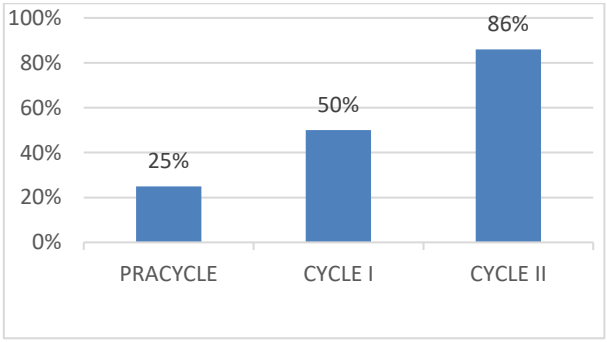

Figure 5. Students' understanding of concepts

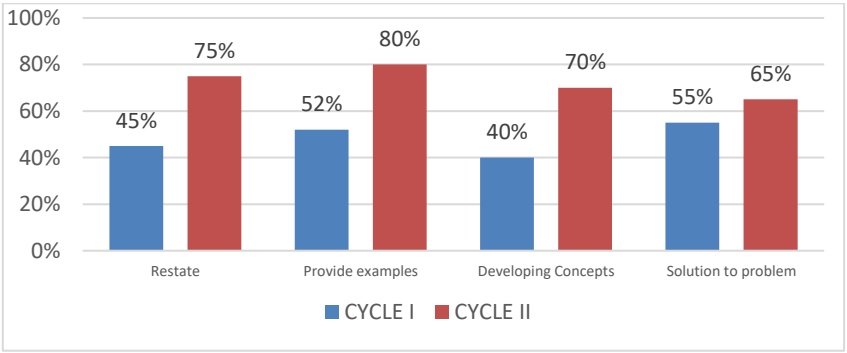

Figure 6. Indicators of Students' Understanding of Concepts

The following is a description of each indicator of concept understanding, namely: (1) Restating the concept. This indicator is visible when students can fill in question sheets number 6-10 and when asked they can answer. The percentage gain in cycle I was 45% or 11 students in the quite good category. The percentage gain in cycle II was 75% or 19 students in the good category. (2) Give an example. This indicator can be seen when students can fill in question sheet number 1 when asked if they can answer. The percentage gain in cycle I was 52% or 13 students in the quite good category. The percentage gain in cycle II was 80% or 20 students in the good category. (3) Developing concepts. This indicator can be seen when students can fill out question sheets number 6-10 when asked if they can answer. The percentage gain in cycle I

was 45% or 11 students in the quite good category. The percentage gain in cycle II was 75% or 20 students in the good category. (4) Problem solving. This indicator can be seen when students can fill out question sheets number 2-5 when asked if they can answer. The percentage gain in cycle I was 55% or 14 students in the quite good category. The percentage gain in cycle II was 65% or 16 students in the good category.

Conceptual understanding in this research was not only taken from tests and indicators of conceptual understanding but was also assisted by group practicum methods. The results were as follows: In the pre-cycle taking UAS scores the results were only 25% or 6 students out of 26 people got the poor category, There was an increase in cycle I after implementing the practicum-based SETS model to 58% or 15 students getting a fairly good category. In cycle II there was an increase to 85% or 22 students whose understanding of the concept was in the very good category. Which means that only 1 group (4 people) has not yet reached the KKM value.

It is very important for students to understand concepts in science learning, if students understand they will be able to carry out tests according to indicators of concept understanding, according to Sumarmo in (Rahayu & Pujiastuti, 2018), namely, (1) restating the concept; (2) Providing examples (3) Developing concepts and (4) Problem solving. Restating a concept is the process of re-expressing an idea or thought using different words but still maintaining the essence or meaning of the concept. Giving an example is the process of explaining or illustrating a concept or idea using real situations, concrete objects, or events that can be understood by other people. Developing a concept is the process of expanding a concept to become more detailed. Problem solving is the process of resolving problems in taking tests.

In this research, students carry out water cycle practicum using simple tools and materials that they use in their daily lives. Through practicum, students are invited to understand and remember each step of the water cycle, and can restate, give examples, develop concepts and be able to solve problems in filling out LKPD and test question sheets. The contents of the LKPD are that students must explain again using group understanding the results of the water cycle practicum that has been carried out. Meanwhile, on the contents of the question sheet, students must remember the explanation given by the researcher as well as the learning videos they have watched together.

This research was motivated by students' low understanding of learning as seen from exam results, they were less active and less enthusiastic in the learning process, so researchers provided the SETS learning model and practicum methods so that students were more enthusiastic and active during the learning process and socialized to work together. complete tasks and increase their own understanding.

Conclusion

Based on the results of the discussion above, the research objectives have been achieved as seen from the implementation of the SETS model which has increased the activities of teachers and students. Therefore, in the SETS model, teacher and student activities achieve significant improvements. The suggestions that can be given are as follows: For teachers, this research shows that using learning models has an impact on students' understanding of concepts, therefore the use of learning models in the classroom must be improved and utilized more regularly. Furthermore, the SETS model can be the teacher's choice to apply in the learning process. The application of the SETS learning model can not only be applied to science learning, but this learning model can be applied to other materials. For schools, this research shows that assistance from education in learning models and methods is very important to use because this can make it easier to achieve learning goals optimally. For students, be more

focused and enthusiastic about learning and increase curiosity to find out material they don't understand.

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