International Journal of Engineering, Management and Humanities (IJEMH)
Volume 4, Issue 4, Jul.-Aug., 2023 pp: 128-137 www.ijemh.com

Application of the Search Solve Create and Share (SSCS) Learning Model in Biochemical Courses To Improve Students' Concept Mastery on Biomolecular Materials

Nadrah Nadrah
Elementary School Teacher Education Study Program, Universitas Muhammadiyah Makkasar, Indonesia

Date of Submission: 20-07-2023 Date of Acceptance: 03-08-2023

ABSTRACT: This study aims to improve students' mastery of concepts in biomolecules through the Search Solve Create and Share (SSCS) learning model at HKBP Nommensen University Pematangsiantar. This research is a student class action research conducted in three cycles. Data collection techniques using observation sheets and end-of-cycle tests. The average value of student learning outcomes (T0) = 57.81 with a learning completeness percentage (KB0) of 25%, (T1) = 66.55 and (KB3) = 44.82%, (T2) = 74.68 and (KB1) 62.5% (T3) = 80.15 and (KB2) = 87.5%. The results showed that applying the Search Solve Create and Share (SSCS) learning model could improve students' conceptual mastery of biomolecule material for chemistry education students at HKBP Nommensen University Pematangsiantar.

KEYWORDS:SSCS Learning Model, Biochemistry, Concept Mastery, Biomolecules

I. INTRODUCTION

Education is a deliberate learning process to explore existing abilities and improve themselves for the better. The 21st century can be said to be the age of knowledge, which is a century marked by a major transformation from an agrarian society to an industrial society and continues to a knowledge society Joshi & Shukla, (2019);Redhana, (2019);Friedmann, (2020). The transformation process is also marked by the occurrence of a set of social and cultural changes in society due to the emergence of globalization and the rapid flow of information Stromquist & Monkman, (2014);[5]. The research was conducted at the University of HKBP Nommensen Pematangsiantar. Based on the results of observations made by researchers at the University of HKBP Nommensen Pematangsiantar in the Biochemistry course, it was found that lecturers in learning used the presentation discussion method without clear steps. Lecturers in Biochemistry have never used learning models that stimulate and improve students' mastery of concepts in biomolecules. This can be seen from the average daily test score of students which is still low, which is 57.81, with classical learning completeness of 25%. Learning is said to be successful if 85% of the number of students who take part in the learning process are able to achieve the minimum completeness criteria set for subject matter in biochemistry courses Harborne, (2014);Duchesne & McMaugh, (2018);Tansey, (2019).

The results of interviews between researchers and lecturers of chemistry education at the University of HKBP Nommensen Pematangsiantar, it is known that the teaching and learning process tends to be teacher centered and text book oriented. Description of Default Paragraph Font; general learning, at the beginning of learning students are asked to read the material to be studied, then the lecturer explains the concepts through a brief presentation and at the end of learning students are asked to work on practice questions. When discussing biomolecular material in the biochemistry course, there was no visible effort by the lecturers to develop group discussion activities. The target for the success of teaching biochemistry courses applied by lecturers tends to be more directed so that students are skilled at working on test questions, both those contained in books, teaching materials and exam questions.

Students focus on writing, this causes students not to understand the concept. When the lecturer gives a question that is different from the example questions that have been discussed previously, students do not understand the solution, so the lecturer must appoint students to come to the front of the class and guide students in solving the problem Crumly et al., (2014); [10];Fiebrink, (2019). In this regard, it is necessary to design

learning that can increase student involvement in the biochemistry learning process, so as to be able to develop competence in understanding concepts. One way is by implementing learning activities through learning models *Search Solve Create and Share (SSCS)* Yusnaeni & AD, (2017);Diani et al., (2019);Sukariasih et al., (2019);Zulnaidi et al., (2021). SSCS is a learning model using a problem solving approach, which can improve students' understanding of concepts. Learning model *Seacrh, Solve, Create, and Share* (SSCS) can increase student activity because students are directly involved in problem solving Sukariasih et al., (2019);Wahyu et al., (2019);Nastiti et al., (2019);Saregar et al., (2018).

Kurniawati & Fatimah, (2014);Yasin & Fakhri, (2020);Saddhono et al., (2021) mention the learning model *Seacrh, Solve, Create, and Share* (SSCS) there are four phases. The *Search* phase involves generating ideas to identify and develop researchable questions or problems in science. Students generate a list of ideas to explore. Then select one or more ideas and place them in a questionable format that can be investigated.

The *Solve* phase focuses on the specific problem defined in the search phase and requires students to generate and implement their plan to obtain an answer. The *Create* phase requires students to produce a product related to the problem, compare data with the problem, make generalizations, if necessary modify. Students use skills such as reducing data to an explanation of the simplest level. The *Create* phase causes students to evaluate their thinking processes. The result of the *Create* phase is the development of an innovative product that communicates the results of the Search phase to the *Solve* phase to other students [19];Jampel & Widiana, (2017)Rahayu & Kusumah, (2018)

The basic principle of the *Share* phase is to involve students in communicating answers to problems or answers to questions. The resulting product becomes the focus of the *Share* phase. The *Share* phase is not only limited to communicating to other students, students also convey their thoughts through communication and interaction, receiving and processing feedback, which is reflected in the answers to problems and answers to questions, generating questions to be investigated in other activities Corebima et al., (2017);Rustam & (Fauzi, 2019);Sari et al., (2017).

Learning model *Seacrh, Solve, Create, and Share* (SSCS) been used in research by Khoirifah et al., (2013) at one of the universities in Bengkulu city for student teacher candidates in semester 2 of the 2011/2012 academic year. Based on the results of the study, it appears that the average N_{gain} higher mastery of experimental class concepts 17% compared to average N_{gain} control class

Learning Model Research *Seacrh, Solve, Create, and Share* (SSCS) also done by Maulana et al., (2014) in even semester VIII students at one of the public junior high schools in Riau, the comparison of the average posttest scores in both classes, namely the control class was 50.00% of the ideal score of 15, while the experimental class was 63.33% of the ideal score of 15. Berdasarkan uraian diatas, perlu diadakan penelitian berjudul "Penerapan Model Pembelajaran *Search Solve Create And Share* (Sscs) Pada Matakuliah Biokimia Untuk Meningkatkan Penguasaan Konsep Mahasiswa Pada Materi Biomolekul".

The formulation in this study is how to increase the mastery of student concepts after being applied to biochemistry courses through the Learning Model *Seacrh, Solve, Create, and Share* (SSCS)? So that the problems in this study are not too broad, the following restrictions are made: mastery of concepts that will be measured in this study are cognitive learning outcomes (study outcomes tests) and student activity in learning. The purpose of this research is to improve students' mastery of chemical concepts in biochemistry courses using the Learning Model *Seacrh, Solve, Create, and Share* (SSCS).

The results of this study are expected to provide benefits: for students, increasing student understanding, because students discover for themselves the biochemical concepts that are being studied from the experiments that have been carried out. For lecturers, as input and study material in improving the quality of learning in lecture rooms. For the University, it is hoped that it can be input for the university in carrying out the guidance and development of lecturers to increase the effectiveness and creativity of learning in the classroom.

II. METHOD

In this study there are two research variables, namely the independent variable and the dependent variable. The independent variable is the Learning Model *Seacrh, Solve, Create, and Share* (SSCS) and the dependent variable is the student's mastery of the concept of biomolecules. The research was conducted in the fourth semester in the Chemistry Education Study Program class, HKBP Nommensen Pematangsiantar University.

International Journal of Engineering, Management and Humanities (IJEMH)
Volume 4, Issue 4, Jul.-Aug., 2023 pp: 128-137 www.ijemh.com

The subjects in this study were all students of Group PK 1, totaling 10 people, consisting of 4 male students and 6 female students.

This research is an action research in the lecture room which aims to improve and improve the learning process in the lecture room. Action research in this lecture room consists of three cycles. Each cycle consists of 4 stages of activity, namely: action planning, implementation of action, observation (observation) and reflection (reflection) Arikunto, (2012);Burns, (2019). The flow of the implementation of classroom action research is carried out as follows:

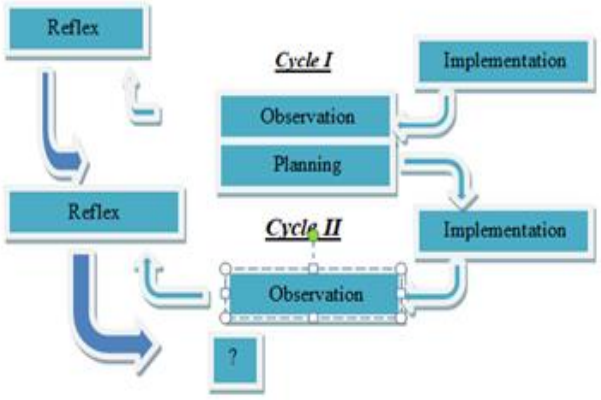

Figure 1. Classroom Action Research (CAR) Model SchematicData collection technique [31]

The data needed in this study were taken using several techniques, including: 1. Tests, namely questions that were tested on students to measure the success of learning outcomes in research actions. The test results obtained were compared to the average value of each cycle. To find the average value of all students used the formula:

$M_x = \frac{\epsilon_x}{N}$[32]

Information:

M_X : Average

$\sum x$: Total scores of all students

N : Total number of students

Complete learning in the Chemistry Education Study Program, University of HKBP Nommensen Pematangsiantar, namely, completeness occurs if there are at least 85% of students in the lecture room who have scored greater than or equal to 75, to calculate the percentage of learning completeness the following formula is used:

$Score = \frac{Raw\ Score}{Total\ Score} \times 100\%$[33]

Based on the average price of student participation in the class obtained, it can be seen the category of success of the action based on Table 1.

Table 1.The level of success of the action in the learning process

Achievement of Learning Goals	Qualification
85 – 100 %	Verry Good
65 – 84 %	Good
55 – 64 %	Not enough
0 – 54 %	fail

III. FINDINGS AND DISCUSSION

Findings

Research Results in Cycle I

Activities carried out at the planning stage are as follows:

1. Initial observations in the PK 1 Group class at HKBP Nommensen Pematangsiantar University which included initial data collection on the results of students' daily tests on the subject of Biomolecules. This data is used as data that has not been given action (T_0)
2. Make a research instrument in the form of a Learning Implementation Plan (RPP) for the sub-subject of the understanding of biomolecules and the scope of biomolecules and types of biomolecules equipped with Student Worksheets

(LKM) and end-of-cycle test questions.

3. Prepare tools and materials for the implementation of practicum such as: test tubes, dropper pipettes, funnels and beakers.
4. Making observation sheets on the implementation of actions by lecturers and making observation sheets on the implementation of the Search, Solve, Create, and Share (SSCS) learning model for students.

Based on the results of the posttest that was carried out at the end of the first cycle, data was obtained that of the 10 students in the PK-1 group who took the posttest, 5 students were declared incomplete, so that learning completeness only reached 44.82% with an average score of 66 ,55. The average percentage of student activity in the first cycle is still low at 51.42%.

Based on the results of the analysis and observations of students in class, there are still weaknesses in the first cycle, namely, as follows::

1. Search phase, the problem presented in this phase concerns the properties of the buffer solution. Students make a list of ideas from the problems presented. There were 8 students (34.37%) at the first meeting who had not been able to make a list of ideas. The second meeting, 5 students (28.12%) who still do not understand make a list of ideas because students are not used to expressing the ideas they think.
2. The Solve phase consists of several activities, namely, first, students make a hypothesis. In this activity there were 4 students (31.25%) at the first meeting, 6 students (25%) at the second meeting who had not been able to make a hypothesis. This is because students do not have prior knowledge about the material to be studied. The next activity is that students make problem-solving plans, there are 3 students (37.93%) at the first meeting and 4 students (35.71%) at the second meeting who are not yet active in making problem-solving plans. After that, students solve problems, in this activity, there were 5 students (31%) at the first meeting, and 7 students (25%) at the second meeting who did not participate in solving problems through experimentation and investigation. At this stage, only active students are involved in solving the problem. The activity continued with students collecting data and information from the investigation, there were 5 students (34.48%) at the first meeting and 5 students (35.71%) at the second meeting, namely those who did not collect experimental data or information obtained from library research. . At this stage students are not yet active in data collection activities. Only a few students from each group collected data. After the students conducted an experiment or literature investigation, the next activity was that students analyzed the data obtained, there were 6 students (52%) at the first meeting and 8 students (42.86%) at the second meeting who did not analyze the data obtained. At this stage students have not been able to understand how to analyze the data obtained to answer problems at the Search stage
3. The next stage is Create. At this stage there are two activities carried out by students. The first activity is that students test the hypothesis. At this stage, there were 6 students (44.83%) at the first meeting, and 7 students (39.28%) at the second meeting who did not test the hypothesis. At this stage only students who make hypotheses in the solve stage test the hypothesis. The next activity is that students create a product, there are 8 students (44.83%) at the first meeting, and 5 students (35.71%) at the second meeting, who are not involved in creating the product..
4. The next stage is Share. At this stage, students present the products that have been produced and provide responses to the observations of other groups. In the product presentation activity, there were 5 students (89.65%) at the first meeting and 5 students (89.65%) at the second meeting who had not actively presented their products. This is because only a few groups appeared as representatives while in the activity of responding to the products of other groups, there were 8 students (82.76%) at the first meeting and 9 students (82.14%) at the second meeting who were not yet active in responding to the results. other group observations. Students do not dare to express their opinion.

To improve students' mastery of concepts on biomolecule material, learning completeness that has not reached 85% and aspects that are still lacking in cycle I, then with guidance on the results of analysis and observations of students in the field, it is necessary to take corrective actions in subsequent teaching in cycle II, that is :

1. The lecturer guides his students how to make a list of ideas to investigate.
2. At the end of the lesson, the lecturer gives an assignment to read the material that will be studied at the next meeting.
3. Lecturers give assignments to students to find out how to make a hypothesis through the internet, books, etc.
4. The lecturer guides the students how to make the steps that will be taken to find a solution to the problem.

5. Lecturers guide their students on how to make the steps that will be taken to find solutions to problems.
6. Lecturers guide their students on how to make the steps that will be taken to find solutions to problems.
7. The lecturer provides direction in analyzing the data that has been obtained so that the results of the data analysis can answer the problems contained in the search stage.
8. Lecturer supervises students in testing hypotheses.
9. Asking students to be able to work together in making products from the results

Research Results in Cycle II

To improve student learning outcomes, as well as aspects that are still lacking in cycle I, the plan is as follows:

1. The lecturer guides his students how to make a list of ideas to be investigated by providing examples of a list of ideas.
2. The lecturer guides his students to make the steps that will be taken to find a solution to the problem.
3. Supervise students in group discussions and instruct students who do not participate to actively cooperate in testing ideas.
4. Create a research instrument in the form of a Learning Implementation Plan (RPP) for the sub-subjects of Carbohydrates, lipids, proteins, and nucleotides equipped with Student Worksheets and end-of-cycle test questions.
5. Make an observation sheet on the implementation of actions by the lecturer and make an observation sheet on the implementation of the learning model *Seacrh, Solve, Create, and Share* (SSCS) for students.

Based on the results of tests that have been carried out at the end of cycle one, the mastery of students' mastery of concepts in biochemistry courses has increased by 17.68% when compared to the mastery of learning outcomes in cycle one, which is 44.82% increased to 62.50% in cycle 2. This means 6 students from 10 students in Group PK-1 were declared to have completed their studies and there were still 4 students who were declared to have not finished studying in the second cycle. However, this does not meet the criteria for student learning completeness in the classroom, which is 85% of all students who get a score of 75. From the results of the analysis, several weaknesses and shortcomings are found in cycle two, namely:

1. In the Search stage, there were 9 students (34.37%) at the first meeting and 7 students (28.12%) at the second meeting who were still unable to list ideas about carbohydrates, lipids, proteins, and nucleotides, namely making what is known, not known and asked to the problem to investigate the answer. At this stage students have started to be able to make a list of ideas because students are getting used to expressing the ideas they think. However, there are still some students who still do not understand making a list of ideas
2. The Solve stage consists of several activities, namely, first, students make a hypothesis. In this activity there were 6 students (31.25%) at the first meeting and 8 students (25%) at the second meeting, who were still unable to make a hypothesis. At this stage only a few students who have not been able to make a hypothesis and other students are able to make a hypothesis because students already have initial knowledge of the material to be studied from the results of reading and summarizing assignments. The next activity is that students make a problem-solving plan, there are 5 students (31.25%) at the first meeting and 7 students (25%) at the second meeting who are still not active to make a problem-solving plan. After that, solving the problem, there were 4 students (21.87%) at the first meeting, and 5 students (18.75%) at the second meeting who were still not active in solving problems through library research. At this stage some students are still not able to carry out the plans that have been made previously by looking at the literature from books. The activity continued with students collecting data and information from the investigation, there were 8 students (31.25%) at the first meeting and 9 students (28.12%) at the second meeting who were still not active in collecting information obtained from library research. After the students conducted the experiment, the next activity was that students analyzed the data obtained, there were 9 students (34.37%) at the first meeting and 9 students (34.37%) at the second meeting who collected information. At this stage, some students are still confused in processing the data/information that has been obtained into a simple explanation to answer the problem at the Search stage.
3. In the Create stage, there are two activities carried out by students. The first activity is that students test the hypothesis. At this stage, there were 8 students (34.37%) at the first meeting and 8 students (34.37%) at the second meeting who had not actively tested the hypothesis. The next activity is that students create a product, there

are 6 students (18.75%) at the first meeting and 5 students (15.62%) at the second meeting who are still not active in creating products..

4. The next stage is Share. At this stage, students present the products that have been produced and provide responses to the observations of other groups. In the product presentation activity, there were 9 students (87.50%) at the first meeting and 9 students (87.50%) at the second meeting who were still not actively presenting their products. This is because only a few groups appeared as representatives while in the activity of responding to the products of other groups there were 10 students (93.10%) at the first meeting, and 9 students (87.50%) at the second meeting who were still not active in responding. other groups' observations. Students still don't dare to express their opinion.

To improve student learning outcomes, learning completeness that has not reached 85% and aspects that are still lacking in cycle II, then with guidelines on the results of analysis and student observations in the field, it is necessary to take corrective actions in the next teaching in cycle III, namely:

1. The lecturer provides examples of the form of a list of ideas on the theory of Carbohydrates, lipids, proteins, and nucleotides to students in order to make it easier for students to list ideas..
2. The lecturer gives examples of hypotheses about lipid material (fats, oils, phospholipids) to students with the aim of helping students make hypotheses.
3. The lecturer guides the students to make the steps that will be taken to find a solution to the problem.
4. The lecturer asks students in groups who have been able to make the steps that will be taken to find problem solving to help other groups who have not been able to.
5. The lecturer announces to the students that those who are not active in the investigation will get a deduction of -10 marks and those who are active will get +10.
6. The lecturer asks the representative of each group to discuss the results of the data analysis that has been obtained with other groups.
7. The lecturer instructs students who do not participate to actively cooperate in testing ideas.
8. Lecturers provide materials and tools for students in making products.
9. The lecturer announces to the students that those who dare to present their products will get an additional +10 score.
10. The lecturer invites students to ask questions by pointing their hands.

Cycle III Research Results

To improve students' mastery of concepts, as well as aspects that are still lacking in cycle II, corrective actions are taken in cycle three learning with the following plans:

1. Revise the lesson plan (RPP) that has been made.
2. Revise teaching materials (guided notes) that have been made
3. Revise the end of the cycle test questions that have been made

Based on the results of observations and understanding tests that have been carried out at the end of cycle III, data obtained that from 10 students in Group PK 1 who took the final test of the cycle there were still 2 students who were declared to have not finished studying in cycle III, so that students' complete learning in class reached 87.50% with an average value of 80.15. Classically, this class has been declared to have completed learning, because it has met the requirements for the percentage of classes that are said to have completed learning, which is 85%. Thus, Group PK 1 of HKBP Nommensen Pematangsiantar University was declared to have finished studying. and in this study an increase in the average student chemistry learning outcomes indicated by the value of cycle 3 (T3) > (T2) > (T1) > (T0).

Recapitulation of the Frequency Distribution of learning outcomes from before the action to cycle three can be seen in Table.

Table 2. Recapitulation of Learning Outcomes from before the Action (T0) to Cycle III (T3).

T_0	**57,81**	**8**	**25**	**Not enough**
T1	66,55	13	44,82	Not enough
T2	74,68	20	62,50	Not enough
T3	85,31	27	84,37	Verry Good

International Journal of Engineering, Management and Humanities (IJEMH)
Volume 4, Issue 4, Jul.-Aug., 2023 pp: 128-137 www.ijemh.com

Discussion

Based on the test results before the action, namely the subject of biomolecules, the completeness of student learning outcomes is 25% with an average value of 57.81. As for the frequency of the number of students who scored 49 as many as 8 students, the range of values of 50 -74 was 0 students and the range of scores was 75 -100 as many as 2 students. The low mastery of learning outcomes occurs because the teaching and learning system has not implemented a learning process that involves students directly so that there is a lack of interest and enthusiasm for student learning in biochemistry subjects. In learning activities, lecturers only train students to work on the questions contained in the exercise book without involving students taking an active role in building biochemical concepts. To overcome these problems, teachers and researchers collaborate to apply the learning model *Seacrh, Solve, Create, and Share* (SSCS).

The first cycle, the lecturer introduces the learning model *Seacrh, Solve, Create, and Share* (SSCS). In the learning process, students are given the opportunity to carry out experimental activities in the laboratory. The SSCS model is carried out in four stages, namely *Search*, *Solve*, *Create*, and *Share*. At the first meeting of the Search stage, when making a list of ideas, students were still confused because students did not understand how to make a list of ideas. At stage *Solve*, namely solving problems through experiments, students are enthusiastic in doing practicums. It's just that practicum activities are still not effective because students are not used to doing practicals. At stage *Create*, students make products in the form of experimental procedures and discussion of experiments. The last stage is Share, students present the results of the experiment. In the presentation activity, only one group presented the experimental results. This is due to time constraints. Based on the results of this first meeting observation, the average percentage of student activity during the learning process in groups at the first meeting was 49.3%.

The second meeting, learning is carried out in class because the material studied is about the calculation of the carbohydrate test. In the Search stage, many students are still not able to make a list of ideas. Then proceed with the Solve stage, students are guided by lecturers in solving problems. But there are still students in the group who don't pay attention. In the Create phase, students make a product in the form of a chart resulting from the solution in the Solve phase. And at the Share stage, students present the chart they have made. The lecturer appointed 2 groups to present their products. Based on the results of this second meeting observation, the average percentage of student activity during the learning process in the group at the first meeting was 52.5%, so that the average percentage of student activity in the group in the first cycle was 50.9% in the category of successful actions taken. during the learning process is a failure.

At the end of the first cycle, students were given a post test. From the results of the first cycle test, the average student learning outcomes were 66.5 with the percentage of student learning completeness of 44.82%. This increase was caused by direct student involvement in the learning process through the Search Solve Create and Share (SSCS) learning model. Through the Search Solve Create and Share (SSCS) learning model, students find and get direct experience through proof experiments carried out by students themselves with their groups. Then students discuss and conclude the experimental results in the worksheet so that from this activity students can find and understand the concept of the material.

In cycle II, the lecturer takes corrective action based on the weaknesses in cycle I. At the third meeting, the Search stage, the lecturer reminds students about the material that has been studied previously and asks students to be actively involved in learning both in group discussions in solving problems.

Based on observations, the average percentage of student activity in the group at the third meeting was 65% and at the fourth meeting it was 72%, so the average percentage of student activity in the group in the second cycle was 68.5%. Furthermore, in Solve activities, the average percentage of student activity increased from an average value of 69.4% to 75%. While in the Create activity, the percentage of student activity on average is from an average value of 73% to 75%. And in the Share activity, the percentage of student activity on average increased from 9% to 12%.

The overall average percentage of student activity in each stage in the second cycle is 59.5%. The category of success of the actions taken during the learning process is lacking so the teacher reflects to improve some of the weaknesses that occur in the second cycle. After the learning process is complete, students take a final test of the cycle. From the final test of the cycle, it was found that the completeness of student learning outcomes

International Journal of Engineering, Management and Humanities (IJEMH)
Volume 4, Issue 4, Jul.-Aug., 2023 pp: 128-137 www.ijemh.com

was 62.50% with an average grade of 74.68. There was an increase of 17.68% from cycle one. This happens because students have understood the concept and can relate the relationship between the material concepts in the first cycle and the second cycle.

Cycle III is an improvement from the weaknesses of cycle II. All high school students participate in group discussions on the activity of making a list of ideas in the Search phase. Based on observations, the average percentage of student activity in the group at the fifth meeting was 78%, and the sixth meeting was 87%, so the average percentage of student activity in the group in the third cycle was 82.50%. Furthermore, in the Solve stage, the average percentage of student activity at the fifth and sixth meetings is 81% and 87.6%. So the average percentage of student activity is 84.3%. While at the Create stage, the average percentage of student activity increased from an average value of 77.5% to an average value of 90%. And at the Share stage, the average percentage of student activity increases from an average value of 15% to an average value of 18.5%. This increase is not much different because only a few groups are representatives to present the products that have been produced. After the learning process is complete, students take the end of the cycle test. Then the students' completeness of learning outcomes was obtained by 87.50% with an average class value of 80.15. In the cycle there is an increase in the percentage of complete learning outcomes that is 25% from cycle two. The improvement in the mastery learning outcomes in cycle three has reached the requirements for mastery learning outcomes, namely 85% of students scored 75, the percentage of student learning mastery was 87.50% as many as 8 students who completed this study stopped in cycle three because it had achieved the desired mastery of learning outcomes..

The increase in student learning outcomes from cycle I to cycle III can be seen in the following graph:

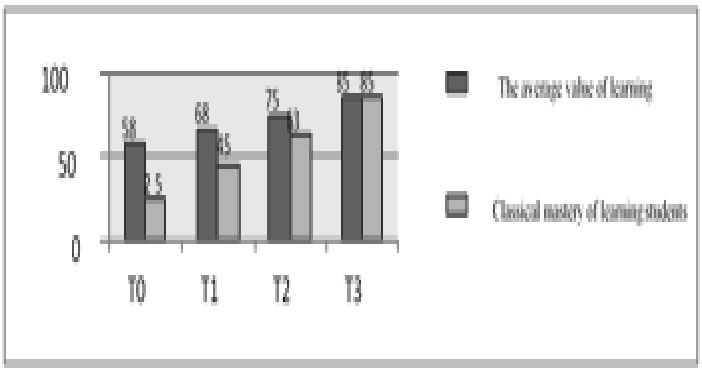

Figure 1. Graph of student learning completeness

Based on the data in Figure 1 above, it shows that student learning outcomes, both the percentage of classical completeness and the average value during the learning process from before the action to cycle III have increased. The increase in mastery of the concepts of Group PK-1 students on the subject of biomolecules is in accordance with the success of research results with the Search Solve Create Share (SSCS) learning model that has been carried out by Suciati, (2013). The results of research conducted by Suciati indicate that learning with the problem posing approach of the SSCS model has a significant effect in improving the mathematical reasoning ability of students majoring in mathematics, FMIPA, Padang State University. This is because learning with this approach creates a more conducive learning atmosphere, student activity and collaboration increases. The process of proposing problems triggers students to be more active in learning which in turn improves reasoning in understanding the given situation.

Research on the Search, Solve, Create, and Share (SSCS) Learning Model was also conducted by Maulana et al., (2014) in class XI students in even semesters at one of SMA Negeri 2 in Inderalaya in Chemistry. Based on the results of the study, the percentage comparison of the average posttest scores in the two classes, namely the control class was 50.00% of the ideal score of 15, while the experimental class was 63.33% of the ideal score of 15.

The results of this study are in accordance with the results of research that has been carried out on students of Default Paragraph Font; class Gruop PK-1 on biomolecule material. On student learning outcomes from post test scores at the end of each cycle where before the action the average

student score (T0) was 25 % with an average value of 57.81, while after being given action in the first cycle (T1) it was 44.82% with an average value of 66.55 in the second cycle (T2), the percentage value was 62.5%, with a an average of 74.68 and in the third cycle (T3) of 87.5% with an average value of 80.15.

IV. CONCLUSION

The application of the Search Solve Create and Share (SSCS) learning model can improve the mastery of the concept of biomolecule material in the biochemistry course of Group PK-1 students at HKBP Nommensen Pematangsiantar University. Students build their own biochemical concepts that are learned so that students can understand biochemical concepts and not memorize the concepts. The increase in mastery of biochemical concepts can be seen from the percentage of classical student learning completeness before being given action (T0) by 25% with an average value of 57.81, while after being given action in cycle one (T1) it is 44.82% with an average value. an average of 66.55 in the second cycle (T2), the percentage value is 62.5%, with an average value of 74.68 and in the third cycle (T3) it is 87.50% with an average value of 80.15 so it shows T3 >T2>T1>T0.

SUGGESTION

Based on the research that has been done, the researchers provide the following suggestions. For high school chemistry teachers and lecturers in higher education units who have the same problem as in this study where students do not understand the concepts that ultimately affect their learning outcomes, they can apply the Search Solve Create and Share (SSCS) Learning Model in teaching and learning process (KBM) in the classroom so that students' mastery of concepts can be further improved.

AKNOWLEDGEMENTS

I would like to thank the Directorate General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology through the Directorate of Resources for launching the Indonesian Innovation Talent Program which has given me the opportunity to realize my research. Thanks also to Mr. Hisar Marulitua Manurung., M.Pd who has guided me from the beginning of the research to completion.

REFERENCES

[1] P. Joshi and S. Shukla, *Child Development and Education in the Twenty-First Century*. Springer, 2019.
[2] I. W. Redhana, "Mengembangkan keterampilan abad ke-21 dalam pembelajaran kimia," *J. Inov. Pendidik. Kim.*, vol. 13, no. 1, 2019.
[3] J. Friedmann, *Planning in the public domain: From knowledge to action*. Princeton University Press, 2020.
[4] N. P. Stromquist and K. Monkman, "Defining globalization and assessing its implications for knowledge and education, revisited," *Glob. Educ. Integr. contestation across Cult.*, vol. 1, pp. 1–21, 2014.
[5] L. Dwyer, "Globalization of tourism: Drivers and outcomes," *Tour. Recreat. Res.*, vol. 40, no. 3, pp. 326–339, 2015.
[6] J. B. Harborne, *Introduction to ecological biochemistry*. Academic press, 2014.
[7] S. Duchesne and A. McMaugh, *Educational psychology for learning and teaching*. Cengage AU, 2018.
[8] J. T. Tansey, *Biochemistry: An integrative approach*. John Wiley & Sons, 2019.
[9] C. Crumly, P. Dietz, and S. d'Angelo, *Pedagogies for student-centered learning: Online and on-ground*. Augsburg Fortress Publishers, 2014.
[10] O. Sensoy and R. DiAngelo, *Is everyone really equal?: An introduction to key concepts in social justice education*. Teachers College Press, 2017.
[11] R. Fiebrink, "Machine learning education for artists, musicians, and other creative practitioners," *ACM Trans. Comput. Educ.*, vol. 19, no. 4, pp. 1–32, 2019.
[12] C. Yusnaeni and S. AD, "H., & Zubaidah, S.(2017). Creative thinking of low academic student undergoing search solve create and share learning integrated with metacognitive strategy," *Int. J. Instr.*, vol. 10, no. 2, pp. 245–262, 2017.
[13] R. Diani, H. Herliantari, I. Irwandani, A. Saregar, and R. Umam, "Search, solve, create, and share (sscs) learning model: the impact on the students' creative problem-solving ability on the concept of substance pressure," *J. Penelit. Fis. dan Apl.*, vol. 9, no. 1, pp. 65–77, 2019.
[14] L. Sukariasih, A. S. Ato, S. Fayanto, L. O. Nursalam, and L. Sahara, "Application of SSCS model (Search, Solve, Create and

Share) for improving learning outcomes: the subject of optic geometric," in *Journal of Physics: Conference Series*, 2019, vol. 1321, no. 3, p. 32075.
[15] H. Zulnaidi, S. Heleni, and M. Syafri, "Effects of SSCS Teaching Model on Students' Mathematical Problemsolving Ability and Self-efficacy.," *Int. J. Instr.*, vol. 14, no. 1, 2021.
[16] W. Wahyu, A. Suryatna, and G. Amalia, "An The Implementation Of Sscs (Search-Solve-Create-Share) Model With Worksheet To Build Students'creativity On Making Simple Water Purifier In Chemistry Classroom," *Unnes Sci. Educ. J.*, vol. 8, no. 3, 2019.
[17] D. Nastiti, S. B. Rahardjo, and E. S. Van Hayus, "Using module based on search, solve, create, and share effective to increase students' science generic skills," in *Journal of Physics: Conference Series*, 2019, vol. 1175, no. 1, p. 12145.
[18] A. Saregar *et al.*, "Temperature and heat learning through SSCS model with scaffolding: Impact on students' critical thinking ability," *J. Educ. Gift. Young Sci.*, vol. 6, no. 3, pp. 39–54, 2018.
[19] L. Kurniawati and B. S. Fatimah, "Problem Solving Lear Ning Approach Using Search, Solve, Create And Share (SSCS) Model And The Student's Mathematical Logical Thinking Skills," in *Proceeding of International Conference On Research, Implementation And Education Of Mathematics And Sciences*, 2014, pp. 18–20.
[20] M. Yasin and J. Fakhri, "The Effect of SSCS Learning Model on Reflective Thinking Skills and Problem Solving Ability.," *Eur. J. Educ. Res.*, vol. 9, no. 2, pp. 743–752, 2020.
[21] K. Saddhono, C. Hasanudin, and A. Fitrianingsih, "The Analysis of 'Search Solve Create Share' Learning Model Using Schoology Apps: Indonesian Syntax Learning," *Psychol. Educ. J.*, vol. 58, no. 2, pp. 4702–4710, 2021.
[22] I. N. Jampel and I. W. Widiana, "Developing creative thinking ability and science concept understanding through SCSS problem solving oriented performance assessment teaching at primary schools," in *Ideas for 21st Century Education*, Routledge, 2017, pp. 243–247.
[23] D. V Rahayu and Y. S. Kusumah, "Improving the basic skills of teaching mathematics through learning with search-solve-create-share strategy," in *Journal of Physics: Conference Series*, 2018, vol. 1013, no. 1, p. 12118.
[24] A. D. Corebima, H. Susilo, and S. Zubaidah, "Creative Thinking of Low Academic Student Undergoing Search Solve Create and Share Learning Integrated with Metacognitive Strategy.," *Int. J. Instr.*, vol. 10, no. 2, 2017.
[25] N. I. Rustam and A. Fauzi, "Effectiveness of integrated science textbook theme earthquake using connected model SSCS problem solving," in *Journal of Physics: Conference Series*, 2019, vol. 1185, no. 1, p. 12092.
[26] D. S. Sari, K. Kusnandi, and S. Suhendra, "A cognitive analysis of students' mathematical communication ability on geometry," in *Journal of Physics: Conference Series*, 2017, vol. 895, no. 1, p. 12083.
[27] S. Khoirifah, E. Saptaningrum, and J. Saefan, "Pengaruh pendekatan problem solving model Search, Solve, Create and Share (SSCS) berbantuan modul terhadap kemampuan berpikir kritis siswa pada pokok bahasan Listrik Dinamis," 2013.
[28] A. Maulana, K. A. Wancik, and S. Sofia, "Penerapan Model Pembelajaran Search Solve Create And Share (Sscs) untuk Meningkatkan Hasil Belajar Siswa di Kelas XI IPA SMA," *J. Penelit. Pendidik. Kim. Kaji. Has. Penelit. Pendidik. Kim.*, vol. 1, no. 1, pp. 9–17, 2014.
[29] S. Arikunto, "Penelitian tindakan kelas," 2012.
[30] A. Burns, "Action research in English language teaching: Contributions and recent developments," *Second Handb. English Lang. Teach.*, pp. 991–1005, 2019.
[31] M. N. Kayaoglu, "Teacher researchers in action research in a heavily centralized education system," *Educ. action Res.*, vol. 23, no. 2, pp. 140–161, 2015.
[32] D. Ben-Zvi, K. Makar, and J. Garfield, *International handbook of research in statistics education*. Springer, 2017.
[33] T. D. Snyder, C. De Brey, and S. A. Dillow, "Digest of Education Statistics 2017, NCES 2018-070.," *Natl. Cent. Educ. Stat.*, 2019.
[34] N. Suciati, "Pengaruh Pembelajaran Search, Solve, Create dan Share dengan Strategi Metakognitif terhadap Kemampuan Menyelesaikan Masalah dan Berpikir Kritis Fisika," *J. Pendidik. Sains*, vol. 1, no. 2, pp. 194–200, 2013.