THE IMPLEMENTATION OF SSCS (SEARCH-SOLVE-CREATE-SHARE) MODEL WITH WORKSHEET TO BUILD STUDENTS' CREATIVITY ON MAKING SIMPLE WATER PURIFIER IN CHEMISTRY CLASSROOM

Wawan Wahyu✉, Asep Suryatna, Gita Amalia

Department of Chemistry Education Faculty of Mathematics and Natural Science Education Universitas Pendidikan Indonesia Bandung

Article Info

Abstract

The aim of this research is to describe the implementation of SSCS (search-solve-create-share) model with worksheet to build students' creativity on making simple water purifier in chemistry classroom. The implementation of this model including activities of chemistry teacher and the students of VIIth grade junior high school in Bandung. The research method is used in this study is design research according to Plomp. The subjects of this are 1 chemistry teacher and 24 students to implementation and 3 observers. The instruments of this research are activity observation sheet of teachers and learners. Data processing result of this research use scoring process based on Likert scale then interpretation of percentage according to Riduwan. The results of this research describing that activity of teacher and the students showed very good.

✉Corresponding author:
Wawan Wahyu
Department of Chemistry Education Faculty of Mathematics and Natural Science Education
Universitas Pendidikan Indonesia Bandung
Email: wawan_wahyu@upi.edu

INTRODUCTION

Currently education in Indonesia is still lacking in developing the creativity of learners, while creativity is important to support learning. According Suyono (2011) Education in schools is still not support the growth and development of creative ability of learners. Learners tend to be required to provide the correct answer according to the teacher and given less opportunity to provide certain alternative answers that foster creativity.

Today, the creativity of learners in learning is one of the important things in the learning process. According to Trnova (2014, pp. 8) since the late 1990s, creativity has become an area of interest in education. Creativity needs to be included in education as a fundamental life skill that allows future generations to survive and thrive in the 21st century. Learners or creative individuals can solve various problems with many alternative solutions. According to Munandar (2009) as a developing country, Indonesia desperately needs a creative force capable of making meaningful contributions to science, technology and art, as well as to the welfare of the nation at large. In relation to this education should be focused on the development of creativity of learners so that later can meet the personal needs and needs of society and state.

The importance of creativity is also shown by the existence of curriculum 2013 which put forward the attitude and cognitive aspects of learners in a balanced way. Curriculum 2013 in Permendikbud No. 68 Year 2013 aims to prepare Indonesian people to have the ability to live as individuals and citizens who believe, productive, creative, innovative, and affective and able to contribute to the life of society, nation, state, and civilization of the world. In the 2013 curriculum there is a fourth Core Competency (KI) that measures the development of learners from skills aspect. It is in accordance with the characteristics of chemistry as a process and chemistry as a product.

Until now research on creativity of learners is still growing in the world of education in general. According to Stenberg (2006) research on creativity begins by Guilford and Torrance. Research on creativity in the world of education is also done by Paul Collard and Janet Looney on Nurturing Creativity in Education (2014) which recommends educational policy holders and researchers to support the development of teachers' creativity and learners.

In science education, one of the researches on creativity is done by Eva Trnova (2014) on IBSE and Creativity Development. This research suggests that science-based science inquiry (IBSE) can develop the creativity of teachers and learners.

In Indonesia, research on creativity has been done, one of which is research conducted by Bakti et al (2015) entitled the application of learning-based project learning model to improve learning achievement and creativity of learners on the subject matter of colloidal system class XI IPA even semester MAN Klaten year lesson 2013/2014. This research indicates that the application of project based learning model can improve learning achievement and creativity of learners.

Based on these studies, creativity is so important that many researchers are developing various media or learning models to enhance the creativity of learners. One of the media that most often interacts with learners is the learner's worksheet. Until now many researchers develop worksheet that can bring or enhance the creativity of learners. One of the researches that developed worksheet as done by Satria Mihardi, et al (2013), concerning The Effect of Project Based Learning Model with KWL Worksheet on Student Creative Thinking Process in Physics Problems. The results show that the creative thinking ability of learners in the project-based learning model using the worksheet is greater than the cooperative

learning model. This proves the learning process with project-based learning model using effective worksheets to improve learners' creative thinking ability.

Based on the results of these studies, to generate and enhance the creativity of learners, researchers use the learner worksheet as the media. This is because, worksheet is a sheet that contains guidelines for learners to carry out programmed activities. The sheets contain guidance, guidance, and understanding so that learners can broaden and deepen their understanding of the material learned (Depdiknas, 2003). Learning by using worksheet requires learners to be more active, whether mental or physical in the learning activities. Learners are accustomed to think critically, logically, and systematically because with this worksheet learners are required to seek their own information, either through experiment, discussion with friends or reading books (Rustaman, 2007). Thus, the use of worksheet is one of the most important things in the learning process.

In the preparation of this worksheet used creativity indicators by William (1968) that can be used to measure and develop the creativity of learners. worksheet is also using the model Search, Solve, Create, and Share (SSCS). This model was first developed by Pizzini, Abel and Sheparson in 1989. In this model learners are required to solve a problem related to everyday life, then identify and find solutions by using a work. Along with that Beetlestone (2012) says that problem solving allows children to use their imaginations, try to realize their ideas, and think about possible possibilities. According to Johan (2014) Search, Solve, Create, and Share (SSCS) Model is a student-centered learning, so that in accordance with the 2013 curriculum that emphasizes learning activities in learners.

Many researchers use the SSCS model as a learning model or to develop a teaching material. Research on SSCS conducted by Inayati and Mahmudi (2013) is about the effect of problem posing approach of Search model, Solve, Create, and Share (SSCS) towards the creativity of learners. The result of this research is learning using problem possing approach SSCS model has positive effect on creative thinking ability and creative attitude. As for Yusnaeni, et al researched about Creative Thinking of Low Academic Student of Undergoing Search Solve Create and Share Learning Integrated with Metacognitive Strategy. These findings suggest that the SSCS with MS learning model has the potential to improve the creative thinking ability of low-achieving learners, as well as the potential to equate educated learners with low and high academic ability.

The topic of making this simple water purifier is chosen because it deals directly with mixed separation material that can be applied directly in everyday life, because the materials and tools needed are easily obtained. With the activity of making a simple water purification tool, the separation of the mixture can be delivered more attractively and in accordance with Basic Competence 4.3 "Present the results of an investigation or work on the nature of the solution, the change of physics and chemical change, or the separation of the mixture". In the KD the learners are required to present a product or work related to the separation of the mixture and in this study is expected to be able to develop the creativity of learners.

Based on the above description, the researcher is interested in conducting research entitled " The implementation of SSCS (search-solve-create-share) model with worksheet to build students' creativity on making simple water purifier in chemistry classroom ".

METHODS

The research method used is design research method according to Plomp. The method of design research is a method used to design, develop policies (such as

programs, teaching and learning strategies, teaching materials, products and systems) as solutions of complex educational problems to develop knowledge about the characteristics of policies and processes of designing and developing (Plomp, 2013). This research is conducted in several stages, as follows:

1) Preliminary research

At this stage, the context analysis is done through literature study, literature study on the science syllabus of VIIth grade junior high school then analyzing the KI / KD that requires the creativity of the learners. Based on this study, basic competence is obtained 4.3 "Present the results of the investigation or work on the nature of the solution, the change of physics and chemical change, or the separation of the mixture". Then proceed with studying the SSCS learning model and reviewing the creativity indicator (William, 1968) as a reference of creative values to be developed.

Further data collected teacher and student response to SSCS based worksheet on making a simple water purifier to build the creativity of learners of VIIth grade junior high school. The response of teachers and learners is done through a questionnaire to 9 teachers of science subjects VIIth grade junior high school and 27 learners. Through this response questionnaire obtained data whether SSCS-based worksheet is needed in building the creativity of learners or not.

In addition, at this stage also carried out the preparation of SSCS-based worksheet in accordance with the results of questionnaire responses of teachers and learners as well as based on basic competencies, creativity indicators and SSCS learning model. The preparation of other research instruments was conducted at this stage. instruments composed including teacher and student activity observation sheets, worksheet answer sheets, as well as an assessment sheet of creative works.

2) Development or prototyping phase

At this stage worksheet validation has been made. Validation was done to 2 chemistry lecturers and 3 teachers of science

VIIth grade junior high school. Validation of content and construction validation sheet is done by filling out the assessment of the suitability of the sub-indicators of creativity with the creativity to be achieved, the conformity of creativity to be achieved with instruction in worksheet, grammatical conformity and clarity of sentence in worksheet, and worksheet layout and suitability. Validation is also done on the rubric of answer worksheet. If the validation result states that worksheet has been valid, then proceed with direct test to the learners of VIIth grade junior high school. If the validation result is not valid yet then it is necessary to make improvement to worksheet before the direct trial.

3) Assessment phase

At this stage is done processing and data analysis of observation results of teacher activities and learners during implementation then the data is made in the form of percentage which then categorized according to Riduwan (2014) and then made the conclusion of the research.

RESULTS AND DISCUSSION

The activities of teachers and learners are obtained through the observation sheet of SSCS-based worksheet in the making of a simple water purifier. Observation of the activities of teachers and learners is used to determine the implementation of the stages of learning SSCS in worksheet. According Rohmawati (2015) the implementation of a learning can be seen from the activities of learners and teachers during the learning took place. Observations were made at the time of implementation with 3 observers.

1) Teacher Activity in impelementation by worksheet

Observation of teacher activity in worksheet implementation is used to determine the implementation of

worksheet. The results of this teacher activity observation are presented in the form of the implementation of each SSCS learning stage. The percentage of the average score of teacher activity from each stage is presented in the following diagram.
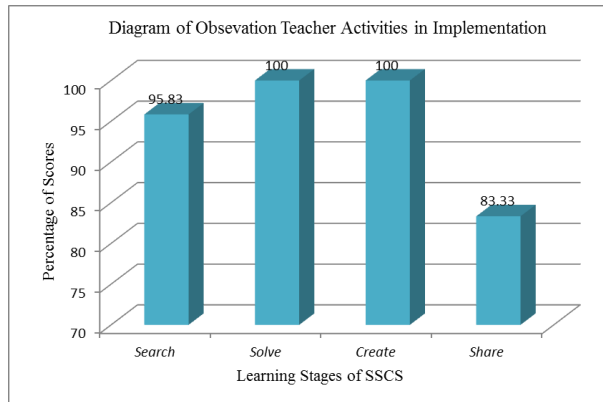
Figure 1. Diagram of Results Observation Teacher Activities

Based on the processing of observations presented in Figure 1, teacher activity on the use of worksheet, all stages are implemented. But the implementation is quite difficult and repeated explanations, because the class conditions are less conducive. In the teacher's share lead the students, but still less directed well because the number of learners are quite a lot and each group is busy preparing a water purifier tool that has been made. Percentage of the implementation of 83.33% share phase still belongs to very strong category according to Riduwan (2014), so it can be said to be done well.

In the search phase the percentage of implementation of 95.83% which is included in the category very well according to Riduwan (2014). On the part of writing at least 3 different questions, the teacher less emphasized the existence of minimal words on the directive, so many learners who only write 3 questions. Nevertheless, the overall activity of teachers in the implementation of worksheet is very good.

Based on the above description, the average percentage of teacher activity score in worksheet implementation is 94,79%

which is very strong or excellent category according to Riduwan (2014).

2) Activity of student in implementation by worksheet

Observation of the activities of learners in the implementation of worksheet is used to determine the implementation of worksheet in its implementation. The results of the observation of these learners' activities are presented in the form of the implementation of each SSCS learning stage. The percentage of average scores of learners activity from each stage is presented in the following diagram.
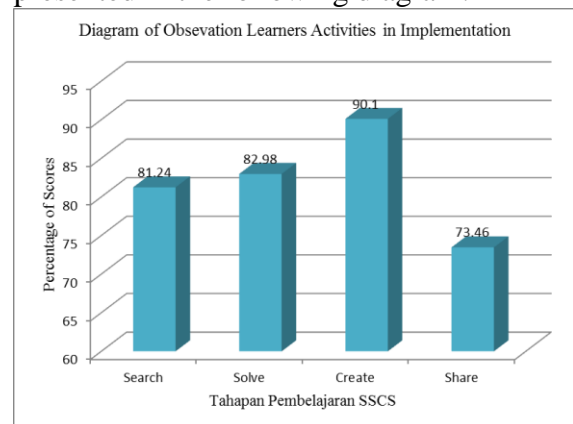
Figure 2. Diagram of Results Observation Student Activities

Based on the processing of observations presented in Figure 2, teacher activity on the use of worksheet, all stages are implemented. But the implementation is quite difficult and repeated explanations, because the class conditions are less conducive. In the teacher's share lead the students, but still less directed well because the number of learners are quite a lot and each group is busy preparing a water purifier tool that has been made. Percentage of the implementation of 83.33% share phase still belongs to very strong category according to Riduwan (2014), so it can be said to be done well.

In the search phase the percentage of implementation of 95.83% which is included in the category very well

according to Riduwan (2014). On the part of writing at least 3 different questions, the teacher less emphasized the existence of minimal words on the directive, so many learners who only write 3 questions. Nevertheless, the overall activity of teachers in the implementation of worksheet is very good. Based on the above description, the average percentage of teacher activity score in worksheet implementation is 94,79% which is very strong or excellent category according to Riduwan (2014).

CONCLUSION

Teacher activity in implementation of SSCS based worksheet on making simple water purifier to build creativity of students of VIIth grade junior high school based on learning phase of search phase, solve, create, and share show very good category, while learners activity in implementation of SSCS based worksheet at making a simple water purifier to build the creativity of students of VIIth grade junior high school based on learning phase of search phase, solve, and create shows very good category and share phase shows good category.

If the SSCS-based worksheet made will be used directly, it is necessary to improve the creativity of the work to be achieved in order to be more specific, eg replacement of the water purifier component used.

Development of SSCS based worksheet on other subject so that more worksheet as media that build creativity of learners. Research on SSCS based worksheet on making simple water purifier for VIIth grade junior high school this result worksheet that able to build creativity of learners in learning. This worksheet can be used as a medium to achieve four basic competencies that demand the skills of learners.

REFERENCES

Stenberg, R. J. (2006). The Nature of Creativity. *Creativity Research Journal*, 18:8, 87-98.

Collard, P. & Looney, J. (2014). Nurturing Creativity in Education. *European Journal of Education*, Vol. 49, No. 3.

Trnova, E. (2014). IBSE and Creativity Development. *International Council of Association for Science Education*, Vol. 25, Issue 1, 8-18.

Beetlestone, F. (2012). *Creative Learning*. Bandung: Penerbit Nusa Media.

Depdiknas. (2013). *Curriculum and Learning Outcomes Basic Competency of Chemistry Subjects SMP and MTs.* Jakarta: Puskur-Balitbang, Depdiknas.

Inayati, N. & Mahmudi, A.. (2013). Effect of Problem Posing Approach Model Search, Solve, Create and Share (SSCS) to the Creativity Learners. *Journal of Mathematics Education. 3 (2) Year 2013.* Available at http://journal.student.uny.ac.id/jurnal/artikel/3139/43/363/ [accessed October 22, 2017]

Johan, H. (2014). Learning Model Search, Solve, Create and Share (SSCS) Problem Solving to Increase Mastery of Student Concept on Dynamic Electrical Material. Bengkulu: *Journal of Teaching MIPA*, Vo. 19 No. 1

Kemendikbud. (2013). Appendix IV permendikbud no. 81 A on the Implementation of the Curriculum. Jakarta: Kemendikbud.

Mihardi, S. (2013). The Effect of Project Based Learning Model with KWL Worksheet on Student Creative Thinking Process in Physics Problems. *Journal of Education and Practice,* Vol. 4, No.25, 2013.

Bakti, M. (2015). Application of Project Based Learning Model of Learning to Increase Learning Achievement and Creativity Learners on Basic Material of Colloid System Class VII IPA Even Semester MAN Klaten Lesson Year 2013/2014. *Journal of Chemistry Education, Vol. 4 No. 1*.

Munandar, U. (1992). *Development Talent and Creativity of School Children*. Jakarta: PT Gramedia.

Plomp, T. & Nieveen, N. (2013). *Educational Design Research*. Netherland: SLO, Eschede.

Riduwan. (2014). *Statistics Basics*. Bandung: Alfabeta.

Rohmawati, A. (2015). Effectiveness of Learning. *Journal of Early Childhood Education*. Vol. 9th Edition, April.

Rustaman, N. (2007). *Biology Teaching Strategy*. Malang: Publisher State University of Malang.

Suyono. (2011). *Education in Indonesia Entering the Millennium III*. Yogyakarta.

William, F.E. (1968). *Workshop on the Use and Adoption of New Media for Developing Creativity*. U.S: u.s Development of Healt, Education, and Welfare Office of Education.

Yusnaeni (2017). Creative Thingking of Low Academic Student Undergoing Search Solve, and Share Learning Intergarted with Metacognitive Strategy. *International Journal of Instruction Vol. 10*.