JPPIPA 9(1) (2023)

Jurnal Penelitian Pendidikan IPA

Journal of Research in Science Education

http://jppipa.unram.ac.id/index.php/jppipa/index

Module Development with Creative Problem Solving Model to Improve Creative Thinking Skills and Self-Efficacy of Junior High School Students

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Received: December 6, 2022
Revised: January 25, 2023
Accepted: January 30, 2023
Published: January 31, 2023

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DOI: 10.29303/jppipa.v9i1.2569

Abstract: This research was conducted on the existence of problems in the form of low creative thinking skills and students' self-efficacy in learning. One way that can be done to solve this problem is by utilizing teaching materials in the form of modules that students can use for independent learning. Therefore, this research was conducted to develop science learning modules to improve the creative thinking skills and self-efficacy of class VIII students of junior high school. This type of research is Educational Design Research (EDR) using the Tessmer development model. The final result of the validation average is 3.49, which is in the very valid category. Therefore, based on the research results, the science learning module has been declared very valid to improve students' creative thinking skills and self-efficacy in learning science.

Keywords: Creative thinking skills; Module; Self-efficacy; Validity

Introduction

The demands and challenges facing the world of education today should be able to produce human resources who have complete competencies, namely integrated competency attitudes, knowledge, and skills (Majid et al., 2014; Wijaya et al., 2016). Therefore, these three components are combined in the 2013 curriculum emphasizes improving the learning process following the times.

The development of the science of a nation shows how advanced the nation is. The deeper the knowledge a person has, the greater his ability to explore his creative potential. Setiyani (2017) says that a person's creative thinking skills are needed to develop science and technology and determine individual success in facing increasingly complex challenges. School is one of the places where students acquire and build this knowledge. All countries, both developing and developed countries, need the ability to develop creative thinking. Low creative thinking skills will impact the quality of human resources. Creative thinking skills are a thinking process that produces an idea, a new idea broadly and variously. The thinking process involves fluency, flexibility, originality, and elaboration.

Creative thinking skills become the provision of students in the competitive world of work which demands them to be more creative and capable. Creative human resources may not grow naturally but must go through a process that is carried out systematically, consistently, professionally, and continuously. This ability is obtained, among other things, through learning activities at school.

Self-confidence strongly influences creative thinking skills in the students themselves. According to the research results of Kisti et al. (2012), there is a

How to Cite:
Fitri, M.A., Hadi, S., Sholahuddin, A., Rusmansyah, R., Aufa, M.N., Hasbie, M., & Saputra, M.A. (2023). The Module Development with Creative Problem-Solving Model to Improve Creative Thinking Skills and Self-Efficacy of Junior High School Students. *Jurnal Penelitian Pendidikan IPA*, *9*(1), 422–426. https://doi.org/10.29303/jppipa.v9i1.2569

significant relationship between creativity and self-efficacy. The self-confidence in question is self-efficacy. Self-efficacy is a belief from a person to display new actions used to overcome a problem to achieve goals.

The research results of Wahyu et al. (2017) based on the experience of researchers as assistant PPL teachers in schools, students are often hesitant to express their opinions. If viewed from Bandura's theory, this problem is thought to be related to the low self-efficacy of students. According to Bandura, if an individual has low self-efficacy, the individual tends to give up easily and is helpless (Solihin et al., 2019). So, it can be concluded that students in this class have low self-efficacy.

So far, secondary school learning in Indonesia has yet to maximize higher-order thinking skills. Accurate data showing low science learning outcomes for students is the result of the Program for International Student Assessment (PISA) study. The 2018 PISA Science results show that Indonesian students have an average score of 396, below the Organization for Economic Co-operation and Development average of 493 (O.E.C.D., 2016). The average Indonesian student can only recognize many basic facts but has yet to be able to communicate and link various science topics, let alone apply complex and abstract concepts.

The results of tests of creative thinking skills in class VIII SMP Negeri 12 Banjarmasin show that the average student score on science material is low. However, the low results are not separate from students' thinking skills. Higher-order thinking skills are very important for mental development and changes in the mindset of students so that the learning process is expected to be successful. Higher-order thinking skills that can be used to solve a problem, according to Ramirez et al. (2008), are creative thinking skills. Creative thinking skills need to be developed early because they are expected to be equipped to deal with problems in everyday life.

It is very important to overcome students' problems in developing creative thinking skills and students' self-efficacy in learning science so that they can face the challenges of the 21st century. One alternative solution provided is the existence of science teaching materials that can be used as learning media for teachers to carry out their roles in the learning process (Asrizal et al., 2017). One of the teaching materials that can improve creative thinking skills is to use modules in learning. A module is a set of teaching materials that are presented systematically to achieve learning objectives based on essential competencies or indicators of achieving competence, equipped with self-instructional activity instructions so that students can control and evaluate learning either with or without a facilitator or teacher.

Creative thinking skills can be implemented by applying the suitable module, namely by using the creative problem solving model, which allows students to play an active role because they are free to study and solve the problems raised (Puccio et al., 2005). Totiana et al. (2012) states that learning using the creative problem solving model is considered more effective than conventional learning. Creative Problem Solving, according to Isrok'atun (2012), emphasizes the importance of finding various alternative ideas and ideas to look for various possible actions at each step of the problem-solving process used so as to foster creative thinking skills.

Based on the results of previous research that used the creative problem-solving learning model with the type of PTK research to increase student self-efficacy, the creative problem-solving model was able to increase all indicators of student self-efficacy. The increase in self-efficacy can also be seen from the average score of all students from the pre-test self-efficacy questionnaire to the average self-efficacy cycle I and II. The average pre-test self-efficacy score was 56.22 (medium), in the first cycle was 59.94 (moderate), and in the second cycle was 69.41 (high). Based on the explanation of the discussion of self-efficacy above, it can be concluded that the CPS model can increase students' self-efficacy from moderate to high (Wahyu et al., 2017). Increasing self-efficacy using the CPS model has also occurred in Riyadi's research (2021) that increasing students' self-efficacy using the CPS model is better than students who receive conventional learning.

The process of the creative problem-solving model consists of several stages, namely Fact Finding, Problem Finding, Idea Finding, Solution Finding, and Acceptance Finding (Foster, 1979). Familiarizing students with creative steps in solving problems can help students to overcome difficulties in learning science. Therefore, using the creative problem solving model is expected to generate interest as well as the creativity of students in learning science.

Based on the description of the problems above, researchers are interested in developing modules with the Creative Problem Solving (CPS) learning model in the learning process. This development research is expected to produce a module with the Creative Problem Solving (CPS) Learning model to improve creative thinking skills and self-efficacy for Grade VIII junior high school students. However, this research is limited to describing validity. Therefore, the product category developed must meet the valid category (Akker et al., 2010).

Method

The type of research that will be used is Educational Design Research using the formative evaluation model of Tessmer (1993) with five stages, namely 1) self-

evaluation, 2) expert reviews, 3) one-to-one tests, 4) small group tests, and 5) field tests.

This study used Banjarmasin 12 Public Middle School to trial the science learning module. The implementation of a limited trial was carried out in one class, namely class VIII B. The selection of the trial class had been determined based on information from the science teacher at SMP Negeri 12 Banjarmasin, who stated that the creative thinking skills and self-efficacy of students from all classes in class VIII still need to be developed.

Data collection techniques in this study used observation and questionnaire techniques. Module validation was carried out by three Validators consisting of 3 ULM Science Education Masters lecturers as academics. The assessment results were then categorized based on the validity category table, as shown in Table 1.

Table 1. Criteria for Validity (Akbar, 2013)

Interval Percentage	Description
$3.25 < V \leq 4.00$	Very valid
$2.50 < V \leq 3.25$	Valid
$1.75 < V \leq 2.50$	Less valid
$1.00 \leq V \leq 1.75$	Invalid

Description: V = Validity value

Result and Discussion

The results of this research are in the form of science learning modules with CPS learning models to improve students' creative thinking skills and self-efficacy on the topic of stress at class VIII SMP Negeri 12 Banjarmasin. Several steps were carried out to obtain a prototype science module with the CPS model: self-evaluation, expert review, one-to-one, small group, and fielded test.

Self-Evaluation

The researcher did an analysis of the curriculum, materials and research subjects, and produced prototype II.

Expert Review

Prototype II will be validated to produce prototype III, the purpose of the expert review is to determine the feasibility of the developed modules that can improve students' creative thinking skills and self-efficacy. Three validators carried out validation, and researchers made improvements to the module.

One to One

The researcher gave the development result modules that had been validated by experts and had been repaired to three students, the students provided assessments and suggestions for improving the development result modules from the student's point of view, and the researchers made improvements to the development module according to the students' suggestions.

Small Group

The researcher conducted an initial trial of the validated and revised development module with ten students from SMP Negeri 12 Banjarmasin consisting of 10 students in class VIII B (besides the one-to-one trial students representing high ability group students, medium and low. The ten students carried out the learning process using the developed prototype III. Before and after carrying out the learning process, students were assessed for creative thinking skills, self-efficacy (pre-test and post-test), and researchers made improvements to the modules developed based on student responses

Field Test

The researcher conducted the final trial for the large class. This stage aims to determine the practicality and effectiveness of the developed prototype. Before the learning process using the module with the CPS model on the topic of pressure begins, students are first tested for creative thinking skills and students' initial self-efficacy by doing a pre-test and after learning by doing a post-test. The learning process is carried out in 4 meetings.

The results of developing learning modules to improve creative thinking skills and self-efficacy for Grade VIII students of junior high school can be seen in Figure 1. The results of the validity of the module can be seen from the results of the validation at the expert review test stage conducted by three validators to determine the feasibility of the developed module, which can improve the creative skills and self-efficacy of class VIII students of junior high school. The validation carried out by the expert is related to content validation, which is divided into three aspects: content, language, and presentation. The results of the self-evaluation stage are submitted to the validator to find out the validity value and suggestions/improvements that need to be made to get a better and quality module.

Figure 1. Module development results

The results of the module validation can be seen in Table 2, which shows that the average validation results have a very valid category. These results indicate that the module developed is in a very valid category to be used in learning after going through the revision stage following the suggestions and input from the validator.

Table 2. Module Validation Results

Validation	Validator			Average	Category
	I	II	III		
Content	65	60	58	3.49	Very Valid
Presentation	60	53	48	3.58	Very Valid
Language	58	56	52	3.41	Very Valid
The Final Result				3.49	Very Valid

Based on the results of the validation in Table 2, it shows that, in general, the average result of the expert validation assessment of the module is 3.49 (very valid) and is used with a slight revision. The score achievement is classified as very valid for each item. The assessment aspect is obtained because, in the module development process, the researcher has compiled the module according to instructional design principles, in addition to paying attention to the principles of developing a teaching material including needs analysis, development of teaching material design, implementation, assessment, evaluation, and validation as well as quality assurance (Prastowo, 2012). The module also includes the CPS model syntax, which is expected to improve students' creative thinking skills and self-efficacy.

This research is in line with the results of research Feriyanto et al. (2020), Sari et al. (2017), Sawitri et al. (2019), and Sugianto et al. (2018) that learning modules are quality and feasible to use if they meet the validity standards assessed by experts and experts based on the components issued by the BSNP which include: (1) content feasibility components, (2) linguistic components, and (3) presentation components.

Conclusion

Based on the research results, the science learning module to improve creative thinking skills and self-efficacy has validity results in the very valid category. Therefore, modules on pressure can be used in the learning process to improve creative thinking skills and self-efficacy in class VIII junior high school students.

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