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CREATIVE PROBLEM SOLVING AND PROCESS SKILLS IN INTEGRATED SCIENCE LEARNING

Lusia Beti Sumarni[1], Fahmi[2*], Eko Wahyuningsih[3]
[1]SMP Negeri 4 Karang Intan, Kabupaten Banjar, Kalimantan Selatan, Indonesia
[2]Pendidikan IPA Universitas Lambung Mangkurat, Banjarmasin, Kalimantan Selatan, Indonesia
[3]SMP Negeri 1 Angsana, Kabupaten Tanah Bumbu, Kalimantan Selatan, Indonesia

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***Corresponding author:** fahmi@ulm.ac.id

Abstrack

Science learning has an important role in helping the development of intelligence for critical thinking, in the intellectual (cognitive), affective and psychomotor aspects of students. The creative problem solving model is a variation of learning with problem solving through systematic techniques in organizing creative ideas to solve a problem followed by strengthening process skills. The creative problem solving model with process skills is in accordance with the characteristics of students to investigate, try, and experiment. This learning activity is intended to foster students' abilities in using students' process skills, and students are able to become critical and independent thinkers, involving activities such as analyzing, synthesizing, making considerations, creating, and applying new knowledge to real-world situations.

Keywords: Science learning, creative problem solving model, process skills.

INTRODUCTION

Integrated learning is essentially a learning model that allows students, both individually and in groups, to actively seek, explore, and discover concepts and principles holistically and authentically. Integrated natural science (IPA) is a subject that is packaged in a certain theme which discusses a combination of physics, chemistry, and biology materials that are interrelated (Irhasyuarna et al., 2022). The government generally explains that integrated science is learning that occurs in close relationship with real experiences and encourages students to be responsive to their environment and culture.

The objectives of science learning include; first, so that students have science concepts and their relevance to everyday life; second, so that students have process skills to develop knowledge, ideas about the surrounding environment; third, so that students are able to use simple technology that is useful for solving problems found in everyday life and fourth, so that students know and can foster a love for the surrounding environment, so that they realize the greatness and majesty of God Almighty (Depdikbud, 1995). Thus, students are trained to be able to discover various concepts that are learned by themselves (Af'idayani et al., 2018; Rahatu et al., 2018; Fahmi et al., 2019; Irhasyuarna et al., 2022). Integration in science learning is intended to make science learning more meaningful, effective, efficient, and able to solve problems (Fahmi et al., 2021; Noor et al., 2023).

To achieve learning objectives, a learning method or model is needed to support its practice. One learning model that can be used is the creative problem solving (CPS) model. The CPS Learning Model is a learning model that focuses on teaching and problem-solving skills followed by strengthening skills. In the implementation of science teaching and learning activities, the application of the CPS model can be supported by process skills. Process skills according to Hamalik (2008), are an approach in the learning process that emphasizes students' activities and creativity to develop their physical and mental abilities to a higher level in processing their learning acquisition.

The CPS model with process skills is in accordance with student characteristics according to Charlotte Buhler (Sobur, 2010), namely children entering a period of investigating, trying, and experimenting, which is stimulated by the urges to investigate and great curiosity, a period of concentration and accumulation of energy to practice, explore, and explore. The CPS learning model will explore critical thinking skills in students.

DISCUSSION

Integrated learning includes integrated learning in one discipline, integrated between subjects, and integrated within and across students. Integrated learning will provide meaningful experiences for students, because in integrated learning students will understand the concepts learned through direct experience and relate them to other concepts that have been understood that are in accordance with the needs of students.

Science learning not only conveys information (facts) and understanding of the material but also pays attention to the development of other abilities such as the ability to use tools and solve problems, even to the development of attitudes, appreciation and student interests. Science is related to how to find out about nature systematically, so that science is not only the mastery of a collection of knowledge that is factual, concepts or principles but also a knowledge of the discovery process (Devi, 2010).

The learning process that emphasizes the intellectual mentality of students in solving various problems faced, so as to find a concept or generalization that can be applied in the field

independently. The intellectual mental ability of students is a determining factor in the success of students in solving every challenge faced, including learning problems that often make them lose their enthusiasm and passion when learning. Teachers are required to have the ability to master various teaching methods used to achieve the desired learning goals because teaching methods are in principle the realization of a combination of learning processes in teachers, in this way the interaction in the teaching and learning process is more effective (Arikunto, 2006).

The CPS model with process skills is in accordance with student characteristics according to Charlotte Buhler (Sobur, 2010), namely children entering a period of investigating, trying, and experimenting, which is stimulated by the urges to investigate and great curiosity, a period of concentration and accumulation of energy to practice, explore, and explore. Process skills are physical and mental skills related to basic abilities that are possessed, mastered and applied in a scientific activity so that they succeed in finding something new. Science process skills aim to make students more active in understanding, mastering the series that they have done, such as observing activities, making hypotheses, clarifying, concluding, interpreting data and communicating.

The CPS model is a variation of problem-solving learning through systematic techniques in organizing creative ideas to solve a problem. According to Munandar (1975) CPS includes two concepts, namely: (1) CPS is a training program designed to improve creative behavior, (2) CPS is a systematic way of organizing and processing information and ideas in order to understand and solve problems creatively - so that the right decisions can be made. With the general goal of improving creative behavior and problem-solving skills - learning to think "outside the boundaries of the known".

The steps of implementing the CPS model consist of 4 phases, namely clarification, brainstorming, evaluation/selection, and implementation. For science process skills described by Bundu (2006), are observation skills, classifying, communicating, predicting, inferring, formulating hypotheses, interpreting, controlling/controlling variables, designing and conducting experiments. When faced with a question, students can use skills to solve problems, to choose and develop their responses. Not only by memorizing without thinking, problem-solving skills expand the thinking process. According to Munandar (1975) CPS is a systematic way of organizing and processing information and ideas in order to understand and solve problems creatively, so that they can make the right decisions. CPS learning students will be able to become reliable and independent thinkers. They are stimulated to be able to become an explorer - looking for new discoveries, inventors - developing new ideas or concepts and innovative testing, designers - creating new plans and models, decision makers - practicing how to make wise choices, and as communicators - developing methods and techniques for exchanging opinions and interacting.

This learning activity is intended to foster students' ability to use student process skills, and students are able to become critical and independent thinkers. Walker (2005) stated that critical thinking skills are a process that allows students to gain new knowledge through problem solving and collaboration. Critical thinking skills focus on the learning process rather than just acquiring knowledge. Critical thinking skills are important in the learning process because these skills provide students with the opportunity to learn through discovery. Critical thinking skills are the heart of the future of all societies around the world (Zoller et al., 2000).

CPS model science learning with process skills in accordance with student characteristics. with a combination of teaching and learning processes that are able to train observation skills, find problems, formulate problems, hypothesize, and be able to solve problems in students. With

this integration, students will gain knowledge and skills in their entirety so that learning becomes meaningful for students. Students are able to become critical and independent thinkers, which involve activities such as analyzing, synthesizing, making judgments, creating, and applying new knowledge to real-world situations.

CONCLUSION

Integrated science learning is learning that occurs in close relationship with the experiences of students. The CPS model with process skills is in accordance with the characteristics of students to investigate, try, and experiment. This learning activity is intended to foster students' ability to use process skills, and students are able to become critical and independent thinkers, involving activities such as analyzing, synthesizing, making considerations, creating, and applying new knowledge to real-world situations, so that students can build their own knowledge through observation and experience.

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CREATIVE PROBLEM SOLVING DAN KETERAMPILAN PROSES DALAM PEMBELAJARAN IPA TERPADU

Abstrak

Pembelajaran IPA mempunyai peranan penting dalam membantu perkembangan kecerdasan untuk berpikir kritis, pada aspek intelektual (kognitif), afektif dan psikomotorik peserta didik. Model creative problem solving merupakan variasi pembelajaran dengan pemecahan masalah melalui teknik sistematis dalam mengorganisasikan ide-ide kreatif untuk menyelesaikan suatu masalah yang diikuti dengan penguatan keterampilan proses. Model creative problem solving dengan keterampilan proses sesuai dengan karakteristik peserta didik untuk menyelidiki, mencoba, dan bereksperimen. Kegiatan pembelajaran ini dimaksudkan untuk menumbuhkan kemampuan peserta didik dalam menggunakan keterampilan proses peserta didik, dan peserta didik mampu menjadi pemikir kritis dan mandiri, yang melibatkan kegiatan-kegiatan seperti menganalisis, mensintesis, membuat pertimbangan, menciptakan, dan menerapkan pengetahuan baru pada situasi dunia nyata.

Kata kunci: *Pembelajaran sains, model pemecahan masalah kreatif, keterampilan proses.*