Identification Creative Thinking Skills in Primary School

T C Bayuni¹, H K Surtikanti², and W Sopandi³

¹Program Studi Pendidikan Dasar, Sekolah Pascasarjana, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No. 229, Bandung 40154, Indonesia
²Departemen Pendidikan Biologi, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No. 229, Bandung 40154, Indonesia
³Departemen Pendidikan Kimia, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No. 229, Bandung 40154, Indonesia

*citrabayuni89@student.upi.edu

Abstract. The ability of creative thinking is that must be possessed by students to life and challenge in 21st century. The ability that must be owned by students is creative thinking. The purpose of this research is to know the creative thinking ability of fourth grade students in primary school on energy concept. The concept of energy is chosen because the concept is studied on basis from third to sixth grade in primary school. The number of respondents in this study were 51 students. This article uses an essay test instrument that is use indicator of creative thinking that is fluency, flexibility, originality, and elaboration. The data obtained are the lowest creative thinking ability in the indicator of originality and elaboration. The result of creative thinking ability in fluency and flexibility stage is classified. The result of this research is the creative thinking ability of primary school students on the concept of energy very low and the need for a learning activity that is able to familiarize primary school students to be able to think creatively to be ready to compete globally in the face of the 4th industrial revolution as a form of life challenge in the 21st century.

1. Introduction
Science is an important aspect in life because it deals with demands, challenges and competition in the era of globalization. The 21st century as an era of globalization is a free competition arena among nations in the world, which demands a pattern of thinking and attitude towards various information and challenges generally in the world of education, especially in basic education, by preparing students through interesting and contextual educational process, teach accordingly as well as an authentic, whole and thorough evaluation. As the Curriculum 2013 based on competence and character, is expected to equip students with a variety of capabilities in accordance with the demands of the times, as well as the development of technology and art, to respond to the challenges of globalization, contribute to community development and social welfare, flexibility and adaptive to various changes [1].

21st century skills are skills that teachers and students must master. Students need to be prepared to understand the nature of science as a process, product and attitude in order to have a stock of conceptual knowledge and creative thinking skills to pursue education to a higher level of education and to be applied as life skill in life. According to the Assessment And Teaching Of 21 St Century Skills Project (ATC21S) study results formulated four categories of skills that must be possessed by students in the 21st century. The four categories are ways of thinking, ways of working, tools for
Quality science education is influenced by the five domains of concept comprehension, process skills, creativity, attitude development and the use of concepts in everyday life [3]. Two of the five domains are closely related to creativity, so it can be seen that creativity is very important in science education.

The nature of science learning is related to how to find out about natural phenomena systematically and scientifically. The natural phenomena that occur can be understood by understanding the facts, concepts or principles of science. As the NGSS [4] define three dimensional standards in science: disciplinary core ideas (DCIs) or content, science engineering and practices (SEPs) and crosscutting concepts (CCs). The integration of appropriate content and applications will make how science and techniques are practiced in the real world. So that science learning becomes more meaningful.

One of the first sources of difficulty in science learning is due to misconceptions and the notion that science is difficult. For many students, science is seen as a difficult, complex and abstract subject that requires special intellectual talent and too much effort to understand [5]. The 2015 Trend in International Mathematics and Science Study (TIMSS) results show that the IPA score obtained by grade 4 primary students in Indonesia is 397 and ranked 45 out of 48 countries [6]. The results of the Program for International Students Assessment (PISA) were initiated by the Organization for Economic Cooperation and Development (OECD) released in December 2016, showing the main indicators of average achievement score of Indonesian students in science and mathematics are alarming. It implies our concern about competitiveness in the future. Indonesia is ranked 64th out of 72 countries [7]. The assessment by PISA not only measures the ability of 15-year-old students to be included in the school curriculum, but is oriented toward the future [8]. Based on these data, students' science ability in Indonesia is still very low.

According to the results of a survey of creative resources obtained from the Global Creativity Index published by Martin Prosperity Institute in 2015 Indonesia ranked 115 out of 139 countries, whereas creativity is a basic need of the 21st century. Facing the 21st century thinking ability to be developed is a creative thinking skill [9]. Therefore, the ability to think creatively should be mastered by educators, leaders and professionals in the future.

Creative thinking is a series of actions that people make to use their minds to create new ideas from a collection of memories containing ideas, descriptions, concepts, experiences and knowledge [10]. This understanding shows that creative thinking is characterized by the creation of something new from the results of ideas, explanations, concepts, experiences, and the knowledge that is in his mind. Student creativity will develop if creative thinking skills are developed in school activities. Creative thinking skills are a form of open thinking that explores the various possibilities for a problem [11].

Based on the exposure, it can be concluded that creativity is an understanding developed and applied to problems encountered to find solutions and hypothesize then test it and communicate the results through the stages of incubation, implementation, and verification to the public.

David Bohm in his book On Creativity states that Creativity is, in my view, something that is impossible to define in words [12]. Reid and Petocz mentioned that creativity can be seen in different ways in different disciplines: in education it is called innovation; in "entrepreneurship" business; in mathematics equated with problem solving, and in music creativity is performance or composition. Creative products are uniquely different and measured by norms, rules and approaches that conform to their own conception of creativity [13]. World Conference on Higher Education (UNESCO, 1998) in [13] where creativity is proclaimed as an Innovative Education Approach. Research on creativity continues to grow and sustain. According to PsycINFO more than 10,000 papers on creativity have been written in the last 10 years, in various fields of psychology such as cognitive, development, clinical, social, and industry or organizations in other fields such as economics, education, and art [14]. Findings about one's creativity in research, among others, believe in his own ideas [15]. Addressing the leadership attitude of intrinsic motivation and determination [16]. The quality and originality of ideas can be influenced by creative positive attitudes [17]. Creativity is the result of learning in cognitive skills, so to be creative can be learned by teaching and learning [18]. Problem solving and
creative thinking are closely related and that creative thinking produces new things. According to [19] creativity is the ability to think about something in a new way, can not and produce a unique solution to a problem. Creativity is also sensitive to problems, fluency, flexibility, novelty, synthesis, reorganization or redefinition of complexity and evaluation [20] Creative thinking involves being able to overcome differences, see opportunities, overcome challenges and then seek relationships by using different possibilities that vary from different perspectives or perspectives. Then developed into even greater possibilities.

The ability to think creatively is a very important and necessary component. Without creative thinking the students will only work on a narrow cognitive level. By thinking creatively students will be able to explain and interpret abstract concepts that enable students to achieve greater mastery [21]. [11] also reveals that the ability to think creatively is important to develop in students, because with that ability will be able to see problems from different angles, able to produce many ideas can enrich human life and improve the quality of life. Creating mind according to Gardner [22] is the ability to uncover and clarify new problems, questions, and phenomena. In this type of mind, we must always be open to new ideas, raising questions and even creative answers. With this creative way of thinking is also possible to enter new areas that promise hope and opportunities to be achieved and utilized. In essence, this kind of thinking will enable us to think beyond thinking or conventional (to think out of the box), so that meaningful progress and life belong to us. Weisberg [23] defines creative thinking as referring to processes to produce a creative product that is a new work (innovative) derived from an activity / activity that is directed to the goal. Another sentence is said to think creatively involves intensive production that meets novelty, so that one can be said to be creative by producing something already known before. If you produce something new to you, but it has been generated by others, then you can still be said to be creative.

Mel Rodhes [16] proposes that it is important to consider four factors in various aspects of the concept of creativity. The four processes are:

a. First personal, personal characteristics or the characteristics of a creative person.

b. Both processes, consisting of motivation, perception, learning, thinking and communicating.

c. Third, the product, translated in real form.

d. The four press, the relationship between human and the environment

Graham Wallas defines four major stages in the creative process.

a. First the preparation to detect problems and data collection.

b. Second, incubation, away from the problem for a certain time.

c. Third illumination, looking for new ideas to come up with solutions and sometimes the idea is beyond expectations.

d. The four verifications of the new idea are examined and tested.

Components of creative thinking in general there are four, including fluency, flexibility, originality, and elaboration [24]. Fluency is the ability to generate many ideas, flexibilities (flexibility) is the ability to produce more varied ideas; originality (originality) is the ability to generate new ideas or ideas that did not exist previously and elaboration (elaboration) is an ability to add or develop ideas resulting in more detailed and detailed ideas. Where each component of creative thinking has its own indicator. Therefore creativity is an important component that must exist and be done in every science learning in the classroom.

Regulation Of National Education Minister No. 22 2006 [25] states that science learning should be conducted in scientific inquiry to cultivate the ability to think, work and be scientific and emphasize the provision of direct learning experience. To be able to develop student creativity depends on the teacher in knowing how creativity is developed [26].

Most teachers still apply conventional learning, where the learning process generally only train the convergent thinking process, so when faced with a problem, students will be difficult to solve the problem creatively.

Teachers are both learning agents and change agents. The role of teachers in managing learning is so important that teachers need to constantly develop themselves and develop the learning process they
manage. This will impact on the increased activity, creativity, interest, and motivation to learn students. In turn, it is expected that student learning outcomes can be improved.

Identification of the ability of creative thinking is very important to do so that the generation of Indonesia is able to develop the skills of the 21st century well. The 4th industrial revolution that takes place at this time demands human beings to have the ability to think creatively. Therefore, the creative thinking of primary school students in Indonesia needs to be identified so that educators know what steps can be taken to improve the ability to think creatively. The title of this study is "Identification of Creative Thinking Skills of Primary School Students". (Qualitative Descriptive Research Main Energy Subjects in Grade IV Primary School Students).

2. Research Methodology
This research uses descriptive method because it wants to get a general idea about the creative thinking skills of primary school students. This research was conducted for 4 months, starting from January until April 2017. The research started by compiling proposal, composing instrument in the form of test and non test, judgment instrument by expert and doing research to primary school student in five grade.

2.1 Sample
Population in this research is all primary school student in one of private school in Purwakarta city with sample of student grade fifth were 51 students. Sampling by way of purposive sample that is sample aims with characteristic of sample which have accepted subject matter of science on energy topic.

2.2 Instruments
Technique of data collecting done by using instrument in the form of written test. The test used is an essay test. The test is tailored to the category of creative thinking ability that is fluency, flexibility, originality and elaboration. The criteria for selecting the instrument used in this study are (a) the instrument must be justified by the expert, (b) the instrument must be appropriate for use in the category of creative thinking ability that is fluency, flexibility, originality and elaboration. (c) the instrument must be able to uncover any indicator of students’ creative thinking ability.

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<tr>
<th>No.</th>
<th>Student Behavior</th>
<th>Meaning</th>
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<tr>
<td>1.</td>
<td>Fluency</td>
<td>Produce many relevant answers / ideas; Smooth flow of thought;</td>
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<tr>
<td>2.</td>
<td>Flexibility</td>
<td>Flexibility Produce uniform ideas; Able to change way or approach; The direction of different thinking;</td>
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<tr>
<td>3.</td>
<td>Originality</td>
<td>Provides unusual answers, others from others, which are rarely given by most people;</td>
</tr>
<tr>
<td>4.</td>
<td>Elaboration</td>
<td>Develops, adds, enriches an idea; Detailing details; Expanding an idea</td>
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3. Result and Discussion
At this stage describes the results of research on the creative thinking skills on energy concepts about energy sources, various forms of energy, changes in energy forms and alternative energy sources.

3.1 Creative Thinking Skill On Fluency Aspect
Fluency can be identified by generating many answers, many relevant ideas and thinking fluently in the topic of energy and its changes. Topic consists of energy sources, various forms of energy, changes in the form of energy and alternative energy sources.

From the results of the research, it was found that from 51 students who worked on the problem only 65% of students who can answer based on indicators of current thinking and 35% of students can
not answers. This happens because at the stage of thinking smoothly students can still answer the question correctly. Students are accustomed to answering questions and questions such as indicators thinking smoothly.

3.2 Creative Thinking Skill On Flexibility Aspect
Flexibility can be explained from different perspective, can make alternative solution and change a method or approach.

From the research result, it is found that only 47% of students are able to think flexibly this happens because students are not accustomed to thinking flexible, 53% of students are accustomed to working on the problem fixed on the existing problems are not able to accept new problem.

3.3 Creative Thinking Skill On Originality Aspect
Originality have not appear in creative thinking test. No one else can make a new and unique answer. The students answer the same with the book. The student can not make a new project. From the research results obtained bhawa only 9% of students who are able to think original. Most of 91% of students can not answer. Since most students are not accustomed to pouring creative ideas into a work, students are accustomed to making a work in accordance with the teacher's command so as to ignore the aspect of originality. Students tend to follow the teacher's direction without wanting to pour their ideas.

3.4 Creative Thinking Skill On Elaboration Aspect
Elaboration is indicated by the skill to enrich and develop an idea or product, or derive details of certain object, ideal or situation to be more interesting. From the research result, only 4% of students are able to think elaboration. Most of 96% of student can not answer. Students only complete the work without detailing because students are only doing something according to the teacher's direction systematically so students are not accustomed to thinking elaboration independently.

4. Conclusion
Based on the results of research that has been implemented can be obtained some conclusions include:
More than half of the respondents score below the average, originality and elaboration indicators have the lowest percentage rates compared to fluency and flexibility indicators. Instruments about essays can reveal the creative thinking skills of primary school students on the topic energy. Based on the calculation of the questionnaire results, the low level of creative thinking ability in primary school students is due to the lesson in schools still using the old curriculum, the teacher has not used the scientific approach recommended by the government and the school still use the old curriculum package in school. The results of the study stated that the creative thinking ability of primary school students on the concept of energy is still very low. So that required the process of science learning by using scientific approach that can improve the skills of the 21st century, especially creative thinking skills. Teachers should prepare a teaching material that can facilitate students to develop their creative thinking skills.

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6. References


