

# CREATIVE THINKING ABILITY THROUGH FIELD TRIP LEARNING ON ECOSYSTEM MATERIAL

S Nugraha<sup>1</sup>, Y H Adisendjaja<sup>2</sup>, Amprasto<sup>3</sup>

<sup>1</sup> Courses of Biology Education, Postgraduate School Indonesia University of Education,  
Jl. Dr. Setiabudi No. 229, Bandung 40154, Indonesia.

<sup>2</sup> Department of Biology Education, Indonesia University of Education,  
Jl. Dr. Setiabudi No. 229, Bandung 40154, Indonesia.

*E-mail: septiannugraha@student.upi.edu*

**Abstract:** Teachers improve learning activity and creativity of students in ecosystem that is using a field trip. Students activities in a field trip are guided through a worksheet to facilitate their observation. Field trip activities implemented in place of Wahana Edukasi Global (WAGLO) Cisalak of Subang District, West Java Province. This study aims to identify and analyze creative thinking ability of students in carrying out field trip. The method used was weak experimental design with one group pretest-posttest. Population subjects in this study were students of grade 10th MA Al-Husna Cisalak Subang District West Java Province. The sample is determined by purposive sampling technique. Data collection was done through a test of creative thinking ability that given at the beginning and end of learning. Data was analyzed by calculating N-gain test result. The results showed that field trip provide enhanced creative thinking ability of students with index N-gain of 0.48 is included in the medium category

**Keywords:** Learning activities, creativity, field trips, WAGLO, creative thinking

Learning process that teachers need to invite students out of the class through a field activity to observe other places or objects so that they get experience of learning directly. Field trip is a method that can give students experience learning outside the classroom with guidance of teachers so that they can develop their physical, mental, social and emotional. Field trip is usually used when educational field trips are undertaken by students of an educational institution the main aim is not only recreation but also gain additional knowledge through direct experiences.

During field trip, students can increase their motivation to learn. New environment and information provided by natural environment can stimulate students awareness and improve the ability of reasoning. Field trip provide opportunities for students to conduct observation and actively participate in events happening around them (Shakil, et al. 2011:6). The environment outside classroom is a laboratory that can be used for ecological observation. Authentic learning environment can be utilized as a source of learn-

ing in field trip activity because it provide field experience that attract students attention (Kuchel, et al. 2015:34). Field trip can also provide a learning experience more relevant, memorable and meaningful for students with involvement and may even entertain them (Rickinson, et al. 2004:29). In an open natural environment, teachers can be more relaxed interaction with students. In addition, field trip can also achieve instructional goals in cognitive, affective, and psychomotor students as well as students to develop interpersonal relationships (Yao, et al. 2015:46).

In general, education has a goal to provides an environment that can optimize students talents and abilities. Everyone has different talents that require different education. Today it has been realized that one's talent is not just intelligence but creativity and ability to perform. Creative thinking can be considered one of the key competencies to face today's challenges. They allow us to remain flexible and provide us with the capacity to deal with the opportunities and challenges that are part of our complex and fast-

changing world (Ritter & Mostert, 2016:243).

Creative thinking can be defined as the entire set of cognitive activities used by individuals according to a specific object, problem and condition, or a type of effort toward a particular event and the problem based on the capacity of the individuals. They try to use their imagination, intelligence, insight, and ideas when they face to such situations (Birgili, 2015:72). Creative thinking is not just ability to produce or create something that does not yet exist, but also an ability to generate new ideas by combining, altering or adding to existing ideas (Anwar, et al. 2012:44). Operationally creative thinking is an ability that reflects fluency, flexibility, and originality in thinking, as well as the ability to elaborate an idea. There are 5 indicators of creative thinking ability measured in this research, namely: fluency, flexibility, originality, elaboration, and evaluation (Munandar, 2012:44).

Given the role of field trip learning is quite important in developing students thinking skills, this study aims to determine and analyze the ability of creative thinking through field trip learning efforts. In this study, field trip learning was to shift student thinking from memorisation of concept to a contextualised understanding, and to have students observe that ecosystems and the relationships within them are complex.

## **METHODS**

This study aims to identify and analyze creative thinking ability of students after field trip on the ecosystem material. The method used was weak experimental design with one group pretest-posttest. The subjects of this study were 24 students of grade 10th MIA 1 MA Al-Husna Cisalak Subang district of West Java province were taken by purposive sampling. Data was collected using 15 test items in essay form given before and after field trip. The questions were developed based on an indicator of creative thinking ability. Development stage test of creative thinking ability includes preparation, question of trials and assessment phase

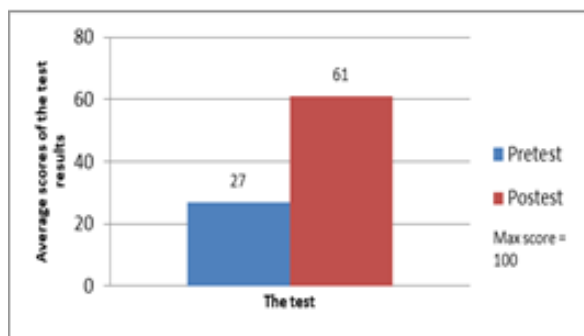
by the re-search expert or lecturer. Calculation of students creative thinking ability scores is done through the percentage of total score obtained from each answer divided by maximum score and then multiplied by 100 (Purwanto, 2009: ). The N-gain index is then adjusted to the criteria of  $g > 0.7$  (High),  $0.3 < g < 0.7$  (Medium), and  $g < 0.3$  (Low) (Meltzer, 2002:1260; Hake, 1999:1).

Activities in the field trip are guided through a worksheet designed by researchers to facilitate student conduct for observations. In the worksheet there are activities to be done by students for 3 meetings. Every activity that students do is observed and assessed according to a rubric that has been determined. Pre-field trip in first meeting conducted in the classroom. Student activities after pre-test is to formulate the problem, define variable of observation, determine hypotheses, determine the tools and materials needed in observation activity, and determine the procedure observations will be conducted in field trip. Field trip activities in the second meeting is carried out by visiting Wahana Edukasi Global (WAGLO). In this meeting, students activities are implementation of observations according to the plan that has been made, data collection, presentation of data in the form of graphs, making maps of observations WAGLO area, and students conduct group discussions to solve questions about observation. At the third meeting, students are still conducting a field trip in same place. Activity of students during a field trip at the second day is to identify problems presented in worksheet, conducting observations concerning the interaction between biotic components and the flow of energy, presents the observed data, deliver work in the form of a song about ecosystems, and answered discussion questions about observation activities. Student interpersonal activity during learning is also an aspect of activity observed and assessed. In addition, the post-field trip activities students do is to do a final test and report the results of observations during field trip activities.

## RESULT AND DISCUSSION

### Enhancement of Student Creative Thinking Ability

Information on enhancement of creative thinking ability is seen from average score of pre-test and post-test presented in the figure 1.



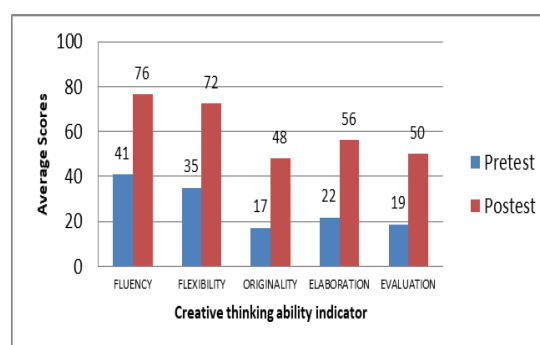
**Figure 1. Comparison of Average Score Pretest and Posttest Students Creative Thinking Ability.**

Results showed an increase in the N-gain index of 0.48 that fall into medium category. Based on data presented in Figure 1, it can be said that there are differences in students creative thinking ability on pre-test and post-test. Data presented also indicates a doubled increase in average score of the results. This is in line with the some results of research that says that field trip to natural location were a beneficial learning aid and a means of fostering students creativity and practices. Field trip can motivate and enrich students learning opportunities as they experience the natural environment, which can then impart inspiring and significantly enhance a students creativity, motivation, and attitude towards nature (Mahgoub & Alawat, 2014: 46). The most important usefulness of field trip lies in the basic fact that they provide the most realistic means for meeting organism in their actual environment. This enables students gain first hand information, and provide opportunities for them to see and possibly touch and feel what they have heard and read about them. Field trip afford the students opportunity of employing various sense in the process of learning biology as a science (Patrick, 2010:171).

The enhancement of students creative thinking ability is seen through N-gain index of 0.48 (medium category). Such enhancement can occurred because through student field trip learning activities facilitated by various phenomena to observe the object being studied directly. It is an effort oriented to the development of students creative thinking ability and also train all aspects of students intelligence either cognitive, affective, or pshycomotor. Therefore, it can be concluded that activities of the student during field trip give an effect and a significant enhancement in creative thinking ability.

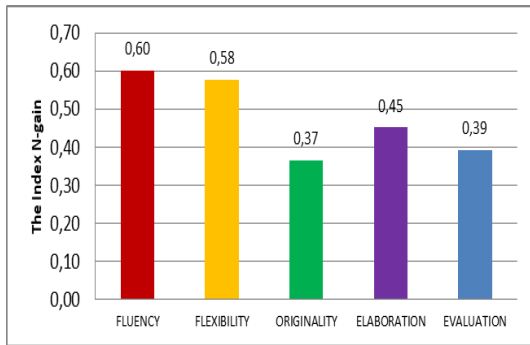
### Enhancement of Creative Thinking Ability on Each Indicator

Calculation of test results is also conducted on 5 indicators of creative thinking ability. Average score obtained by each indicator is presented in the figure 2.



**Figure 2. Comparison of pre-test and Post-test Score Average on each Indicator Creative Thinking Ability.**

Figure 2 showed that students creative thinking ability on each indicator has increased. The highest increase was obtained from indicator of the flexibility thinking, while the lowest score obtained from researchers of the originality thinking. It can also be proved by comparison of N-gain index on each indicator of students creative thinking ability presented in the figure 3.



**Figure 3. Comparison of N-gain Index on Each Indicator of Creative Thinking Ability.**

Based on data presented in figure 2 and 3, it appears that each indicator of creative thinking ability has increased that fall into the medium category with N-gain index being in the range between 0.37 to 0.60. Fluency thinking have a tendency to approach increase in high category, while indicators that have a tendency close to the low category were originality thinking and evaluation. This is consistent with research that says that learning through field trips to Bangka Botanical Garden (BBG) can improve creative thinking ability of students with an average increase of 0.59 the medium category. Improvement in creative thinking also occurred on any indicator between the score of 0.52-0.63 included medium category (Zanzibar, 2015:603).

Fluency thinking measured by indicator that students can trigger many ideas or answers to solve a problem. In field trip learning, indicators are facilitated with activities that allow them to express their ideas as to formulate a question about the observations made. Teachers also facilitate students by giving a problem through pictures/videos and students are requested to provide interpretation by asking questions. Through these activities creative thinking ability of students can optimally develop and it is evidenced by the N-gain index has a high tendency.

Fluency thinking ability related to the ecosystem material is presented through question about cow and goat etawa, student observation about biotic and abiotic component, pond ecosystem in field trip location, and observation on the influence of

abiotic factor on biotic. In general, students contextual understanding through field trip learning will influence how students respond to these questions. The results are in accordance with other studies that field trip were used within the project and as result of these activities shows positive attitudes towards science and develop their creative thinking (Sener, et al. 2015:65).

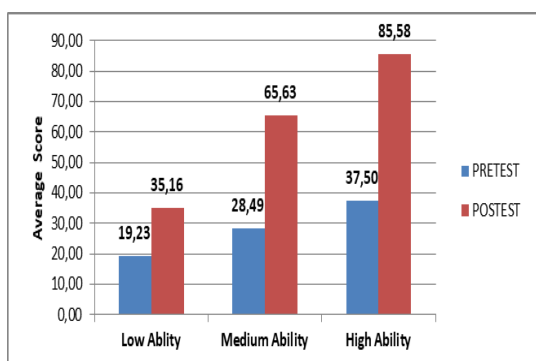
Thinking aspect that gains a low N-gain index tendency were originality and evaluation of thinking. Indicator of the originality thinking ability that is expected that students are able to make a combination of various patterns or forms into something new. The ability of originality thinking was facilitated through students activities in preparing tools and materials required during field trip, design steps of observation will be undertaken, and determine format data collection of observations. In this study, the ability of originality thinking has not optimally developed because students are not yet accustomed to designing observation activities without seeing observation steps on worksheets or books used in school. While the evaluation thinking ability indicator that students are able to take a wise action.

Evaluation thinking indicators are facilitated through student activities in making conclusions about the observations that have been made. Activity to concluded of the observation results have not trained students as a whole, because at this stage only a few students are able to make decisions in group discussion activities. The lack of students participation in results concluding of field observation activities that have been done has not optimally developed. Evaluation thinking ability is an important indicator in creative thinking because to relate creative thinking not only to devising solutions to a problem but also to the very process of problem defining (Daskolia, et al. 2012:277).

### **Enhancement Creative Thinking Based on Ability Levels**

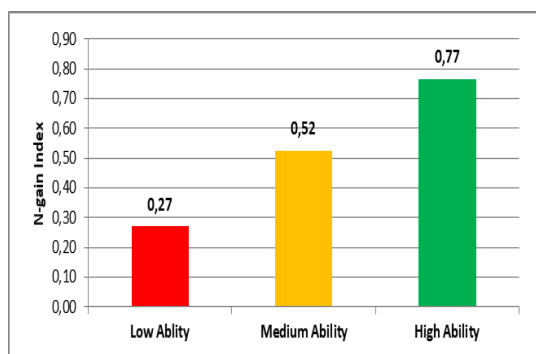
Data from the average score of students creative thinking ability based on ability level high, medium, and low on the field trip

presented in figure 4.



**Figure 4. Comparison of Average Score Pre-test and Post-test Creative Thinking Based on Ability Level Students.**

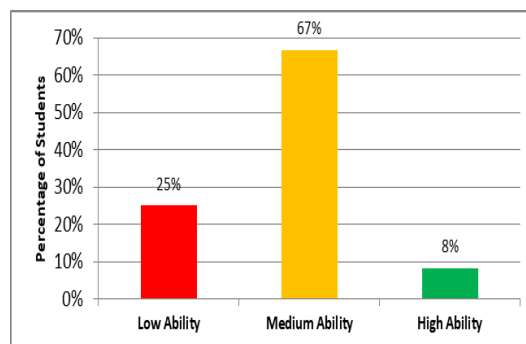
In figure 4, there is a difference pre-test and post-test result of creative thinking ability significantly between students with low, medium and high ability. The data presented also indicate enhancement of creative thinking ability in students with low, medium or high ability. Comparison of N-gain index students creative thinking ability based on skill level is presented in Figure 5.



**Figure 5. Comparison of N-gain Index of Creative Thinking Based on Student Ability Level.**

The data in figure 5 showed a significant comparison N-gain index of creative thinking ability gained by each category. In figure 5 showed that N-gain index accordance with category of capability.

The percentage number of students based on students level ability is presented in figure 6.



**Figure 6. Percentage of Number of Students Based on the Level of Creative Thinking Ability.**

Figure 6 showed that students who have medium ability level based on N-gain index of creative thinking dominate more than half subjects of the research population. This is in line with other studies which suggest that students of varying degrees of ability (high, medium, low) have enhanced creative thinking ability despite varying amounts of enhancement (Zanzibar, 2015:603). The difference in enhancement creative thinking ability dominated by students with medium ability showing that there was a minority of students who have not been up in following every field trip learning activities so that student learning outcomes have not achieved the expected results.

Another factor that allows learning outcomes not suitability with expected because the learning process is not optimally facilitate students development creative thinking. Due to activity field trip undertaken is the first time for students so they need to habituate and good management in implementing learning activities outside of the class. There are several obstacles that must be observed teachers in implementation field trip activities such as cultural of school, teacher resources, risk, cost, and location (Scott, et al. 2014:8).

School culture support on a field trip activities is important because students have desire to learn with the environment and they can develop positive relationships through these activities. Another important factor to consider in implementing field trip was teacher resources. The teacher's knowledge about field trip will affect the way teachers

in designing and managing activities. Proper planning and implementation will optimize achievement of learning objectives.

## CONCLUSIONS

### Conclusion

Based on the results, it can be concluded that field trip learning can enhance creative thinking ability of students to achievement N-gain index of 0.48 (medium category). Enhancement also occurs in every indicator of the creative thinking ability, both fluency thinking, flexibility thinking, originality thinking, elaboration thinking, and evaluation thinking. The enhancement of each indicator is on N-gain index between 0.37 to 0.60 (medium category). The enhancement also occurs based on the level of ability either low, medium, or high ability. There are several obstacles that must be observed teachers in implementation field trip activities such as cultural of school, teacher resources, risk, cost, and location.

### Suggestion

Field trip learning has not been widely applied in schools so it is expected to be developed and used as an alternative learning in improving the ability of creative thinking. The result of creative thinking ability has not obtained maximum results. Therefore field trip learning needs to be tested more widely by performing improvements to the instruments used such as adjusting the worksheet as a learning guide in order to maximally facilitate field trip activities.

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