Unleashing Students' Creativity Through Science Lift the Flap Book

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Abstract. The purpose of this study to examine the effectiveness of Science Lift the Flap Book in increasing students' creative thinking skills. The quantitative method was used in this study with one group pretest-posttest design. The sample of this study consisted of 26 students from class III MI Maarif Pagerwojo. Data collection methods included observation and test. The test is used to assess students' creative thinking abilities using creative thinking indicators, such as fluency, flexibility, originality, and elaboration. This study found that using science lift the flap book can help students improve their creative thinking skills. It can be seen from the increases in the average pretest score 38.75 and the posttest score 86.43.It can be assumed that there was significant different in the average of pretest and posttest. Students creative thinking abilities are improved afer using science lift the flap book. Before using Science Lift the Flap Book, 15 students had less creative criteria, and 11 students had quite creative. After using Science Lift the Flap Book, three students were in the quite creative category, three students were in the creative category, and twenty students were in the very creative category. The use of science lift the flap book can help students learn science more easily, can improve students' learning outcomes, and encourage students to think creatively.

Keywords: Science Lift the Flap Book · creative thinking skills · one-group pretest-posttest design · teaching tool · knowledge-based society

1 Introduction

Science is the subject that is oriented to promote students' scientific attitudes. By learning science, the students are expected to be able to learn about themselves and the natural environment. As a result, it can be applied in daily life [1]. Therefore, science teaching and learning should be done by preparing the students to think critically, logically and creatively in order to solve a real-life problem. Creative thinking can be interpreted as the process to generate ideas so it can be applied in the real world. However, it entails solving problems that require a combination of mathematical, interpersonal, and linguistic skills.[2].

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Gregor (in Handayani) explains that creative thinking skill is very important cognitive aspect and it should be exist in teaching science [3]. However, the students' creativity in science learning process have less attention [4]. The teaching activities are not oriented to develop students to think creatively, because it is dominated by the teacher, so it can chain the students' mindset and creativity [5]. Allen (in Garraway) explains many teachers in elementary schools face various problems in teaching science, including a lack of teacher confidence in their capacity in understanding science and their ignorance in how to teach science effectively [6]. In addition, several problems effected the low of students creative think ability are the selection of materials and teaching media used by the teacher are still inappropriate for the students' characteristics, the material presented in teaching and learning activities are based on the textbooks [7].

Based on the observations result at MI Ma'arif Pagerwojo, the science teaching and learning atmosphere does not foster students' creative thinking skills. The students' abilities to think creatively and solve problems are still low, as shown by the number of pupils who answered the questions based on textbooks or explanations from the teacher. In addition, the textbooks used are also not supported by illustrated pictures which can help students understand the material. Based on these conditions, science lift the flap book is needed to support science learning activities and to improve students' creative thinking skills.

A lift the flap book is a book that contains pictures and windows that can be opened to the right, left, up or down. The lift the flap book makes students become interested in learning, because they can see pictures that can be opened and closed [8]. Lift the flap book has several advantages when it is used in teaching and learning, including pictures, material, or explanations so it can increase students' curiosity, attention, and interest in learning material. Lift the flap book is very helpful in summarizing material in learning science [9], it can help students to understand the concept and a more enjoyable atmosphere [10]. The lift the flap book used in this study contains material on plant parts. The questions in this book are presented in the form of quizzes and puzzles to increase students' curiosities and creative thinking abilities. Therefore, giving students a variety of challenging task can help them improve creative thinking ability [11]. Denise (2008) (in Umaroh & Kristiani) describes several indicators of creative thinking skills, including fluency, flexibility, originality, and elaboration. The ability to generate ideas, questions, and alternative answers is referred to as fluency. Flexibility means person's ability in generating various ideas and questions from various perspectives, while originality refers to the person's capacity in generating ideas to solve a problem in order to create unique thoughts. Elaboration means the ability of person to develop ideas or objects so they become more interesting [12]. Institution can make efforts to improve students' creative thinking abilities, such providing in-depth knowledge, providing lots of experience and motivation [13].

The use of appropriate media or teaching materials in learning influences student's comprehension of the material conveyed by the teacher, it is also closely related to students' creative thinking. Therefore, the researcher intends to examine the effectiveness of using science lift the flap book in improving creative thinking skills of the students' in learning science.

Table 1. Interpretation of students' creative thinking abilities [15]

The achievement of students' creative thinking	Category
$80 < K \leq 100$	Very Creative
$60 < K \leq 80$	Creative
$40 < K \leq 60$	Quite Creative
$20 < K \leq 40$	Less Creative
$0 < K \leq 20$	Very Less Creative

Table 2. The results of students' creative thinking abilities based on creative thinking levels before using lift the flap book

Number of students	**Category**
15	Less creative
11	Quite Creative

2 Research Method

This study uses quantitative research with one group pretest – posttest design [14].

$$O_1 \times O_2$$

O1 = Pretest score (before using science lift the flap book)
O2 = Posttest score (after using science lift the flap book)

The sample of this study consist of 26 students from class III MI Maarif Pagerwojo. Data collection techniques used observation and test. The test is used to measure students' creative thinking skills based on creative thinking indicators, such as fluency, flexibility, originality, and elaboration. The test consists of five essay questions. The Table 1 provides interpretation of students' creative thinking abilities.

3 Result and Discussion

3.1 Students' Creative Thinking Skills

Creative thinking skills of the students are assessed by giving pre-tests and post-tests. The pretest was used to assessed students creative thinking skills before science lift the flap book, while the post was used to assess students' creative thinking skills after using science lift the flap book.

Table 2 shows the number of students based on their creative thinking level after pretest. There are 15 students (57.6%) in the less creative category. Meanwhile, 11 students (42.3%) were classified as quite creative. These results prove that the students' creative thinking levels are low, because half of students are in less creative category.

Table 3. The results of students' creative thinking abilities based on creative thinking levels after using lift the flap book

Number of Students	Category
3	Quite Creative
3	Creative
20	Very Creative

Table 4. Paired Samples Statistics

Pair 1		Mean	N	Std. Deviation	Std. Error Mean
	Pretest	38.7500	32	6.86271	1.21317
	Posttest	86.4375	32	12.95635	2.29038

Table 5. Paired Samples Correlations

Pair 1	N	Correlation	Sig.
Pretest & Posttest	32	.662	.000

Table 6. Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of Difference				
				Lower	Upper			
Pretest-Posttest	-4.76875E1	9.86175	1.74333	-51.24304	-44.13196	-27.354	31	.000

Table 3 shows the number of students based their creative thinking level after posttest. There are three students (11.5%) students in quite creative category, three students (11.5%) in the creative category, and twenty students (76.9%) are in very creative category. These results indicate that the number of students based on the creative thinking levels are increased after using lift the flap book.

3.2 The Effectiveness of Using Science Lift the Flap Book in Improving Students' Creative Thinking Skills

The paired-t-test analysis is used to examine the effectiveness of lift the flap book in improving students' creative thinking skills.

Table 4 shows the result of pretest and posttest. The pretest score average 38.75 while the posttest score average 86.43. It can be concluded that the average pretest and posttest score has a significance difference (Table 5).

This data shows that the application of science lift the flap book material on plant parts resulted in a significant improvement in the average of learning outcomes of students. The findings of this study have an impact on the effectiveness of learning, because one of the effectiveness indicators in teaching and learning is when the students can reach the minimum completeness criteria. Students' pretest result is below minimum completeness score criteria before using science lift the flap book, However, after utilizing science lift the flap book, students' average score reached the minimum completeness score criteria. Science lift the flap with the material on plant parts is an effective media for teaching and learning science. The use of this book allows students to learn science more easily, improve students' learning outcomes and encourages students to think creatively.

The material presented in the science lift the flap book in this study is related to everyday life and it is appropriate with the development of elementary school age students so it can encourage students to think scientifically. Thus, students' creative thinking abilities improve when they are directly involved in learning activities (Table 6).

The science lift the flap book used in this study has some benefits, it can be used to summarize natural science material [7]. The pictures and color combinations in the science lift the flap book are designed attractively so it can improve students' interest in reading and learning the material. Students perception will be easier when even if they do not directly see the concrete object because the pictures in this book can help then increase their interest in what they have read. Giving students the chance to interact with the pictures in the book, can help them to improve their creative thinking skills. This findings are in line with the research conducted by Handayani, student activities when opening the lift the flap book, looking at pictures, and reading material can improve creative thinking skills and students' motoric skills [3]. The questions in the science lift the flap book are presented in the form of quizzes and puzzles and presented openly during learning activities, so it can stimulate students to think creatively. According to Kutlu, several learning activities such scaffolding and asking open-ended questions can improve and stimulate students' creative thinking abilities [16]. Giving open questions indirectly will be able to form patterns of students' creative thinking, innovative, and problem-solving activities. Hence, to achieve the maximum results, improving students' creative thinking skills must be done through active learning strategies [13].

4 Conclusion

The findings of this study show that science lift the flap book is able to help students improve their creative thinking skills. As shown by the increase of the average students' result from the pretest to the posttest. After using lift the flap book, the number of students in the classification of creative thinking level increased as well. The use of science lift the flap book can help students learn science more easily, can improve students' learning outcomes, and encourage students to think creatively.

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