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Research Highlights in Language, Literature and Education

Vol. 1

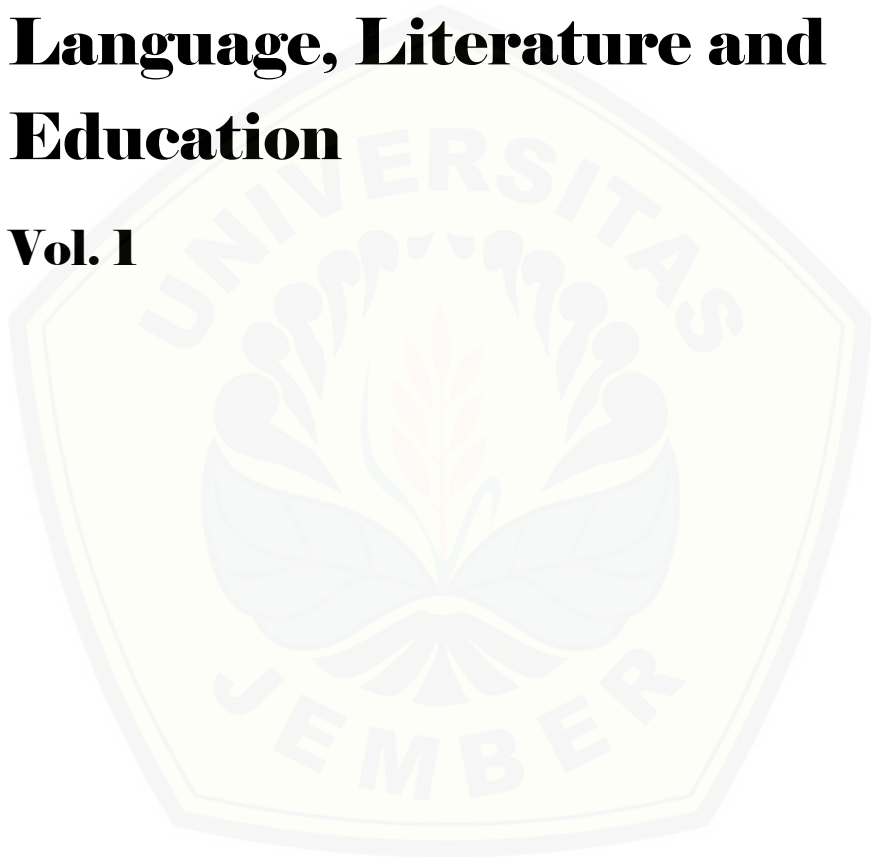
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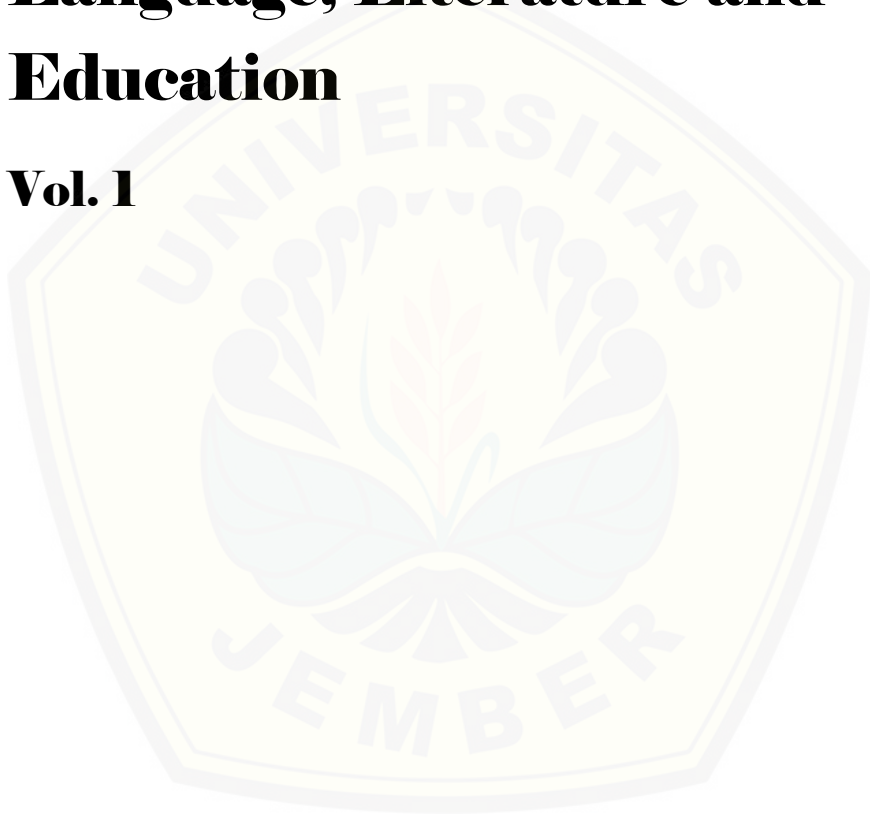
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Research Highlights in Language, Literature and Education

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India ■ United Kingdom



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FIRST EDITION 2022

ISBN 978-93-5547-795-8 (Print)

ISBN 978-93-5547-796-5 (eBook)

DOI: 10.9734/bpi/rhll/v1



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PREFACE

This book covers key areas of Language, Literature and Education. The contributions by the authors include education system, need base education, cognitive, creative thinking skills, innovative learning, industrial agriculture, collaborations, critical theory approach, educational institution, higher education, international partnerships, globalization, power relations, pandemic, health protocols, social media, travel restrictions, FOSS tools, proprietary software, awareness, learning and engagement, open educational resources, attitude, adaptation, sharing resources, and flipped classroom. This book contains various materials suitable for students, researchers and academicians in the field of Language, Literature and Education.



The Contribution of Cognitive Ability and Affective Ability towards the Creative Thinking Skills of Senior High School Students by Using Innovative Learning in Industrial Agricultural Areas

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DOI: 10.9734/bpi/rhll/v1/3745A

ABSTRACT

Creative thinking skills are one of the important skills in learning. Several research results have reported the effect of various learning models on students' creative thinking skills. This research aims at investigating the contribution of cognitive ability and affective ability on students' creative thinking skills. This research uses descriptive quantitative research method with multiple linear regression analyses. The data were used to calculate the correlation coefficient and the significance of the correlation. Furthermore, the regression equation would be determined. The results of this research show that cognitive ability and affective ability have a positive correlation with students' creative thinking skills. The effective contribution of the two variables towards students' creative thinking skills is 88.6%.

Keywords: Cognitive; affective; creative thinking skills; innovative learning; industrial agriculture.

1. INTRODUCTION

Education is what can shape the future of a country, including the future of Indonesia. Education is a necessity for everyone. In Indonesia, every citizen has the same right to obtain quality education. Moreover, teachers play an important role in the improvement of the the quality of education. This is because teachers have the obligation to compile/design, implement and evaluate learning [1]. Furthermore, it was explained that teaching and learning activities can be influenced by various factors, such as maturity, motivation, relationship between students and teachers, level of freedom, verbal ability, teacher communication

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skills, and a sense of security. The more these factors are fulfilled, the better the teaching and learning activities will run. Teachers should be able to make students understand the learning material clearly. Furthermore, teachers also need to be skilled at solving various problems.

Students' learning abilities cannot be separated from 3 domains, namely cognitive ability, affective ability and psychomotor ability. Cognitive ability is related to students' knowledge, while affective ability is related to the students' attitudes and behavior which the students show after completing the learning activities. Ee & Widjaja [2] and Stillman [3] state that a person with good cognitive ability will find it easier to understand and solve problems, simplify and interpret context, verify and compare results, make criticism, do validation, and make effective communication. This statement is supported by Rahayu (2015) explaining that a person's ability to report and revise incorrect answers based on particular input is a form of one's cognitive development.

The importance of creative thinking skills to support the era of the industrial revolution 5.0 is indisputable. Students are considered to understand problems if they are able to show what they know and what is asked. Students are considered to have fluency in solving problems if they are able to solve problems with various logically correct answers. Students are considered to have flexibility in solving problems if the students are able to use two or more different and correct ways to solve the problems. Students are considered to have novelty in solving problems when they are able to make different answers from the previous answers or from those that are commonly known to students. Siswono [4] explains that increasing students' creative thinking skills means increasing their ability in understanding problems, fluency, flexibility and novelty in problem solving. Furthermore, Malaka (2011) states that creative thinking does not only mean creating new things. As a matter of fact, humans never create new things. Humans can only find what others have not discovered, humans can only change or combine things that already exist, not creating new ones.

Related to the creative thinking skill, Silvia [5] explains that the creativity that appears in a person is also influenced by his cognitive abilities. Cognitive abilities play a certain role in the problem solving process. To find a solution for problem solving, creative thinking skills are necessary. This statement is supported with the research results conducted by Batey & Furnham [6], which reveals that there are various types of creative thinking skills in a person, for example a person's ability to solve problems, to process information gaps, to resolve inconsistencies, to formulate problems clearly, to formulate hypotheses, and to investigate the truth of a hypothesis. Moreover, Setiawan [7] and Santrock [8] also explain that the ability to think creatively is closely related to one's intelligence/cognition. Setiawan [9] explains that the characteristics of cognitive abilities that are related to creative thinking skills are, for example, related to elaboration, originality, and imagination.

Regarding the correlation between affective ability and creative thinking skill, Batey, Furnham, & Safiullina (2010) explain that creativity has a positive

3. RESULTS

The research data were analyzed by calculating the correlation coefficient and the significance test. After that the regression equation was determined. The data calculation in this research used SPSS 23 to determine the correlation between students' cognitive ability and their creative thinking skills, and the correlation between the students' affective ability and their creative thinking skills. Table 1 below shows the correlation between cognitive and affective abilities towards the students' creative thinking skills.

Table 1. The correlation between cognitive and affective abilities towards creative thinking skills

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6765.329	2	3382.665	89.106	.000 ^b
	Residual	873.132	23	37.962		
	Total	7638.462	25			

a. Dependent Variable: Creative

b. Predictors: (Constant), Affective, Cognitive

Based on the results of the analysis, it is evident that the correlation coefficient found was significant, which means that cognitive and affective abilities had a positive correlation with students' creative thinking skills. Furthermore, a regression test was carried out to determine how big the correlation between cognitive ability and affective ability towards the students' creative thinking skills is. The regression test was done by using SPSS, and the results of the test are presented in Table 2. The results of the test showed that the score of the R square or the determination coefficient was 0.886, which means that the cognitive ability and the affective ability had a contribution of 88.6% towards students' creative thinking skills, while the remaining percentage was influenced by other factors, which were not measured in this research.

Table 2. The determination coefficient of the correlation between cognitive ability and affective ability towards students' creative thinking skills

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.941 ^a	.886	.876	6.16135

a. Predictors: (Constant), Affective, Cognitive

The data in Table 3 show the regression equation obtained from the variables of cognitive ability and affective ability with creative thinking skills. Based on the data in the table, the regression equation $Y = 0,216X_1 + 0,867X_2 - 13,870$ was obtained. This means that each additional point of the creative thinking skill will

be followed with an increase in the cognitive ability variable and the affective ability variable by 0.216 and 0.867 respectively.

Table 3. Table of correlation coefficients between cognitive abilities and affective abilities towards creative thinking skills

Model		Coefficients ^a			t	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	-13.870	16.992		-.816	.423
	Cognitive	.216	.275	.099	.785	.440
	Affective	.867	.127	.858	6.824	.000

a. Dependent Variable: Creative

4. DISCUSSION

Based on the results of this research, it is proven that cognitive ability and affective ability have a positive correlation with creative thinking skills with a contribution of 88.6%. Komarudin [12] states that creativity is commonly defined as the ability to create a new product. The creation is not necessarily to be a whole new product, but it may be a combination of preexisting elements. Sitorus, Anas, & Waruhu [13] explained that each individual had different creative abilities ranging from low to high creative thinking skills. This relates to the personality type of each individual. Mayer [14] states that personality type describes how a person thinks, processes feelings and interacts in the social world.

This is in line with this research in that a person's creative ability is influenced by his cognitive abilities and affective abilities. Funder [15] explains that a person's behavior is related to his creative thinking ability. Van de Walle, Karp, and Bay-Williams [16] explain that a person's creativity is related to his cognition, emotion, motivation and self-regulation. A person's emotion offers an opportunity to be creative and can be a source of creative ideas. Similarly, a person's motivation, especially intrinsic motivation, is involved in creative thinking activities. This relates to a person's desire to do something, to create and to take advantage of opportunities for expression. It was further explained that mood can increase awareness, fluency, and flexibility in thinking. In addition to a person's emotions and motivations, one's cognitive knowledge also has an effect on the improvement of his creativity. According to Bahr and Bossé [17], a person's reasoning ability will require them to be more active and skilled in the learning process. With the cognitive abilities, the students will be able to develop new knowledge from their experience and their previous knowledge. These abilities may have an effect on the students' ability to solve problems, which they might find in various situations in their lives. The students' problem solving skill which they obtained from their cognitive thinking will have an impact on their ability to think creatively and innovatively to solve problems as well as possible.

Francis et al. [18] explained that assigning students with cases related to their daily lives (agroecosystem) will help them explore their knowledge. Furthermore, it is stated that the open case study method is a learning approach that students need to explore information relevant to their community, to solve problems and to develop potential for further development. Francis et al. [19] also explained that one of the key methods in education is the use of open case study learning system. The results of searching for information in the field or in the environment around the school will provide a good picture of the current situation and can be used to set long-term plans and goals regarding the expectations of the community. Bawden [20] and Jordan et al. [21] explain that there are 5 main attributes in relation to increasing students' competence in the field of agroecology, including contestability, contingency, collectivity, connectivity, and cognition. Dailey [22] in his research explains that community-based learning is needed to provide industrial agriculture-based education. Science-based activities are also needed to enrich the students' knowledge about what they learn.

A number of previous studies revealed that there was not any correlation between intelligence and creativity (Getzels and Jackson, 1962; Wallach and Kogan, 1965). However, recently more and more related research with more sophisticated measurement tools has been continually conducted. The latest and most recent results are starting to emerge, namely there is a correlation between a person's creative thinking skills and his cognitive abilities. Although it is already clear that a person's intelligence has a correlation with his creative abilities, one must be able to distinguish which types of cognitive abilities are parts of creative thinking [23]. The results of this research indicate that there is a significant correlation between cognitive abilities and affective abilities towards students' creative abilities. This result is supported with previous research conducted by Kim [24] revealing a positive correlation between a person's cognitive abilities and creativity. Similarly, Silvia [25] finds that there is a significant correlation between intelligence and creative thinking.

5. CONCLUSION AND SUGGESTION

Based on the results of the research, it can be concluded that there is a correlation between cognitive abilities and affective abilities towards the creative thinking skills of Senior high school students taught by using innovative learning. The effective contribution of cognitive ability and affective ability towards the students' creative thinking skills is 88.6%. Moreover, the relative contribution of cognitive abilities and affective ability towards the students' creative thinking skills is 22.32% and 77.68% respectively. Based on these results, therefore, it is recommended that further research be conducted on investigating the correlation between other variables, other than cognitive ability and affective ability, and students' creative thinking skills. Moreover, further research can also be conducted using different learning model on different education levels.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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