

The Relationship Between Linguistic Intelligence and Creative Thinking (Case Study at MAN 1 Kota Serang, Indonesia)

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ABSTRAK

This research aims to investigate the relationship between linguistic intelligence and creative thinking. In addition, this research aims to analyze how linguistic intelligence influences creative thinking. This research was conducted at MAN 1 Serang City, Indonesia. The data analysis method was carried out using regression. The result of this research shows that there is an influence that linguistic intelligence has a significant influence on creative thinking. Linguistic intelligence involves mastery of language, including understanding grammar, vocabulary, and sentence structure can form the basis for someone to communicate clearly and effectively and can use various figures of speech, similes, or analogies to make their writing livelier and more interesting. Linguistic intelligence helps connect ideas that may not be directly related, see problems from different points of view, and design strong and interesting narratives. Thus, it can be concluded that linguistic intelligence has an influence on creative thinking and is an important component in the development of innovative ideas and creative problem-solving.



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1. Introduction

The policy direction for the implementation of education to prepare students to be able to have skills by the demands of the times (21st-century skills) must also continue to be improved to produce output that is in line with the demands of the times. These 21st-century skills consist of critical thinking and problem-solving skills (critical thinking and problem-solving), collaboration skills, the ability to think creatively (creativity skills), and the ability to communicate (communication skills) later known as the 4C's Skills

(critical thinking, collaboration, creativity, and communication)

As one of the 21st-century skills that students must master, creativity is closely related to innovation where creative people are often called innovators. Creativity is related to the internalization process or the process of looking for ideas or thoughts related to a particular problem or situation. So in short, creativity is an operational step in the context of using or actualizing all the abilities and resources you have to solve certain problems or discover new things that did not

exist before. Meanwhile, innovation is a product or output as a result of someone's creativity in creating or discovering something

Creativity is an individual mental process that gives birth to effective new ideas, processes, methods, or products that are imaginative, flexible, successive, and discontinuous, which are useful in various fields for solving problems (Safi'i, 2019). It was further stated that creativity is not only an act of the brain, but emotional variables and mental health greatly influence the birth of creative work. Intelligence without a healthy mentality is very difficult to produce creative work. Creativity is a process that produces new work that can be accepted by certain communities or can be recognized by them as something useful (Yuswatiningsih, 2017). A person's creativity is characterized by the ability to overcome challenges or problems with new solution ideas (Susanti et al., 2022). Creativity is originality, meaning that the product, process, or person can create something that no one else has created (Lismayanti, 2019).

Creativity is the ability to think that has fluency, flexibility, originality, and detail, while from an affective perspective, creativity is characterized by strong motivation, curiosity, interest in complex tasks, courage to face risks, not giving up easily, appreciation of beauty, having a sense of humor, always want to seek new experiences, respect oneself and others, and so on (Lestari, 2019). Creativity is the ability possessed by a person to produce a new/original idea/product

that has useful value, where the results of the idea/product are obtained through a process of imaginative activity or synthesis of thoughts whose results are not just a summary, but include the formation of new patterns and combinations. information obtained from previous experience (Sit et al., 2016). Creativity is an active process required in innovation that requires special skills and an understanding of the context in which creativity is applied (Uloli, 2021). It is further stated that creativity involves divergent thinking, namely the ability to produce new and original ideas that are unusual by their nature. The following is an illustration of divergent thinking.

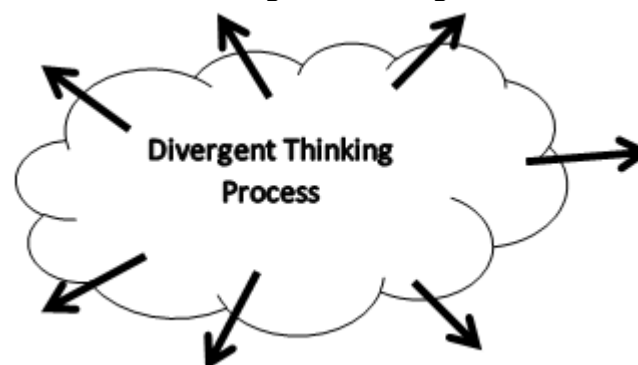


Figure 1 Divergent thinking process

It is further stated that creativity involves divergent thinking, namely the ability to produce new and original ideas that are unusual by their nature. The following is an illustration of divergent thinking. Silalahi, et al. define creative thinking skills as the ability to use reason to consider and decide on things to create new things or have novelty value in different ways (Silalahi, 2020). Creative thinking is imaginative thinking directed at innovation. It is based on questions that ask "what

if", "why", "why not"; "how" and "how else"? creative thinking is based on considering alternatives, possibilities, and other ways of imagining and doing things. Furthermore, thinking can also be interpreted as using all the potential of the mind and mind to consider and decide something in memory so thinking requires several aspects of reasoning, considering, and strengthening a decision (DiYanni, 2016).

The process of looking for solutions to the problems faced and finding something new that may not have previously existed is related to creative thinking. Through creative thinking, someone creates something new that arises or emerges through the insight process. In creative thinking, there are some factors involved. They are finding and solving problems, selecting information that is relevant to the problem, evaluating ideas, associative thinking, flexibility, and divergent thinking (Sari et al., 2023). Creativity is related to individual habits in carrying out creative actions, processes, or behaviors that produce a product (Jumadi et al., 2021). Creative thinking will develop well if teachers can facilitate and encourage students' thinking potential through various learning activities at school (Putri et al., 2023). Based on the description above, it can be synthesized that creative thinking is the ability to process thoughts, elaborate, and develop them to produce new ideas, notions, or discoveries that do not yet exist or are the result of the development of previous ideas, notions or

discoveries which include aspects of fluency, flexibility, authenticity, and elaboration.

Moore emphasized that the most important and basic thing in creative thinking is making decisions regarding various situations that require creativity in thinking. The ability to think creatively is a high-level thinking ability because it is related to the ability to process thoughts, elaborate, and develop them to produce new ideas or ideas that do not yet exist or are the result of the development of this thinking ability. This thinking ability needs to continue to be developed to support students' abilities in supporting student learning outcomes (Moore, 1967). Creative thinking and critical thinking can be defined as the formulation of possible solutions to a problem or explanations of a phenomenon, and creative thinking is a tool for testing and evaluating these solutions and explanations.

It is further explained that making a decision goes through several stages, as follows:

- a. Recognizing and defining the problem (recognizing and defining the problem);
- b. Gathering information (gathering information);
- c. Making tentative conclusions (forming tentative conclusions);
- d. Testing tentative conclusions (testing tentative conclusions); and
- e. Evaluate and make decisions (evaluation and decision)

Intelligence is the spiritual ability to adapt to new situations by using thinking according to one's goals. A person can be said to act

intelligently if, in certain situations, he can act in appropriate ways. This means that he can solve the difficulties and problems that arise in that situation (Warsah & Daheri, 2021). Jozsef explains that intelligence means the power of learning, understanding, and reasoning mental ability (Jozsef, 2001). The word linguistics is the scientific study of language or the comparison of particular languages. So linguistic intelligence means the ability to understand knowledge related to language based on scientific principles. Linguistic intelligence is the student's ability to use words in speaking and writing (Rahmadina, 2021).

Linguistic intelligence is the ability or capacity to use words effectively, either orally (for example, as a storyteller, orator, or politician), or in written form (for example, as a poet, playwright, editor, or journalist). This intelligence also includes the ability to manipulate or imitate syntax or language structure, phonology or language sounds, semantics or the meaning of language expressions, or pragmatic dimensions or at the practical level of language use (Thomas Armstrong, 2009). Some of the uses of language include rhetoric (using language to convince other people to take certain actions), mnemonics (using language to remember information, explanation (using language to provide information), and metalanguage (using language to talk about oneself). Linguistic intelligence is the ability to use words interpret words, and communicate ideas through spoken

language and body language. The characteristics of students who have linguistic intelligence are that they enjoy reading and communicating, are good at putting words together, are good at interpreting words, like music, are good at remembering/memorizing, and are humorous. Linguistic intelligence includes sensitivity to spoken and written language, the ability to learn languages, and the ability to use the language well for certain purposes (Gardner, 1999).

Linguistic intelligence plays an important role in achieving success in various aspects of life, both in education and life (Handayani et al., 2021). This is because linguistic intelligence is the basic foundation of communication skills that the students must have. Communication skills help the students to build relationships with their environment, improve social skills, and the ability to convey ideas or feelings, and these skills can also determine a person's success in work. Based on the definitions as stated by the experts above, it can be synthesized that linguistic intelligence is the ability to understand knowledge related to language based on scientific principles which also includes the ability to manipulate or imitate the syntax or structure of language, phonology, or language sounds, semantics or meaning of language expressions, or pragmatic dimensions at the practical level of using language in daily interactions and/or for certain purposes. This research aims to investigate the relationship between linguistic intelligence and creative thinking. In

addition, this research aims to analyze how linguistic intelligence influences creative thinking.

Several relevant studies have been conducted previously, including those conducted by Mohammed, et al. (2021) with the research title The Relationship between Multiple-Intelligence and Thinking Patterns through Critical Thinking among 10th-Grade Students in Private Schools in Abu Dhabi, concluding that there is a positive and strong relationship between Multiple intelligence factors--verbal linguistics with thought patterns and critical thinking (Mohammed et al., 2021). Fitriani (2018) conducted research entitled The Influence of Linguistic Intelligence on Mathematical Connection Ability in Solving Open Ended Problems on Trigonometry with the conclusion that mathematical connection ability requires linguistic intelligence which refers to Howard Gardner's opinion for solving open ended problems that have more than one solution (Fitriani, 2018). Another research conducted by Yi, et al. (2011) with the title The Role of Multiple Intelligences and Creativity in Students' Learning Style which concludes that there is a relationship between linguistic intelligence and creative thinking (Yi et al., 2011).

Several relevant studies, as stated above, have not yet

specifically discussed the relationship between linguistic intelligence and creative thinking and how the interaction between linguistic intelligence and creative thinking is described. Therefore, the author feels that it is important to conduct this research. The research aims to investigate the relationship between linguistic intelligence and creative thinking and describe how this relationship interacts. It is hoped that this research will provide benefits to learning designs that are oriented towards improving students' linguistic intelligence and creative thinking.

2. Research Method

This research is correlational research using a quantitative approach to find the relationship between linguistic intelligence as the independent variable (X) and creative thinking as the dependent variable (Y).

Sampling Technique

This research was conducted at 1st State Islamic Senior High School in Serang City (MAN 1 Kota Serang), Indonesia, which is a formal higher education institution under the Ministry of Religion Affairs, and the sample of this research was taken from class XI students. Sample determination was carried out using the Isaac and Michael formula.

$$s = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2(N - 1) + \lambda^2 \cdot P \cdot Q}$$

The following is the calculation of the sample size from class XI MAN 1 Kota Serang

students based on the margin error of 5%:

$$s = \frac{3,841.273.0,5.0,5}{0,0025.(273 - 1).3,841.0,5.0,5}$$

$$s = \frac{262.15}{1,64}$$

$$s = 159,8, \text{rounded become } 160$$

Determining the number of samples from a certain population using the Isaac and Michael formula by using an error rate of 5%, the number of samples taken by

researchers was 160 students of 273 the number of students in class XI MAN 1 Kota Serang, Indonesia. The sample distribution can be seen in the following graph.

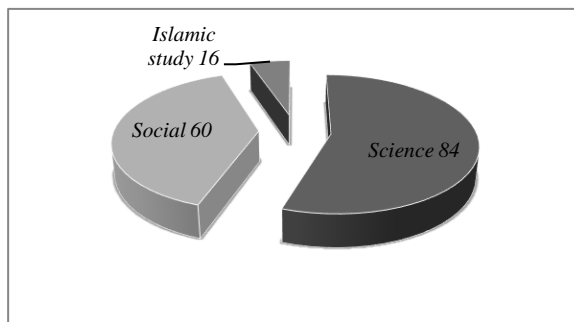


Figure 2. Sample distribution

Data Collection

Data Analysis

The data analysis used in this research is simple regression to predict how much the value of the dependent variable (in this case the creative thinking variable) will change if the value of the

independent variable (linguistic intelligence) is manipulated (Soegiyono, 2013). Furthermore, this analysis is also used to describe how much influence linguistic intelligence (X) has on creative thinking (Y).

3. Results and Discussion

Data Description

The following is a description of the data from research conducted using instruments that have previously been tested for validity and reliability.

Table 1. Data description

	N	Mean	Std. Deviation	Minimum	Maximum
Linguistic Intelligence	160	72.14	15.857	20	100
Creative Thinking	160	68.67	11.908	40	95

The histogram from the data above can be presented as follows:

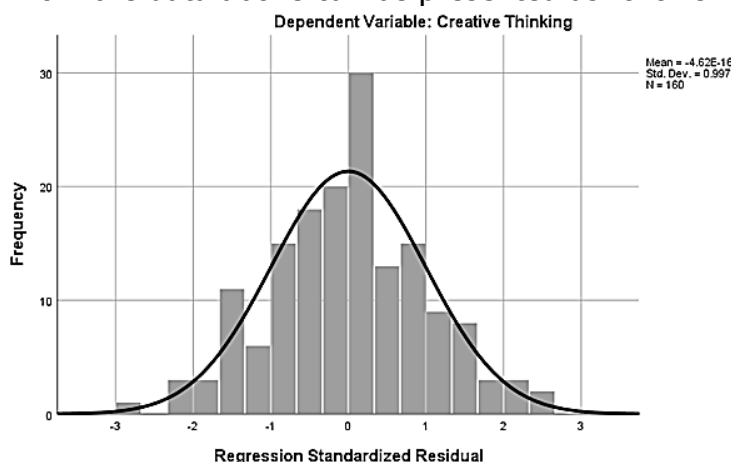


Figure 3. Histogram of the data

Normality and Linearity Test

Normality Test

The normality test is a statistical process used to check whether the data distribution follows a normal distribution pattern or not. The normal distribution is a symmetric distribution defined by the mean and standard deviation, where most of the data is distributed around the mean and follows a bell pattern.

The important normality test was carried out in this study using the Kolmogorov-Smirnov test with the assumption that if the p-value generated by the normality test is large enough (usually more than 0.05), then the data variables in this study are normally distributed. However, if the p-value is small (less than 0.05), it can be concluded that the data is not normally distributed. The following is the normality test using the Kolmogorov-Smirnov test:

Table 2. Result of normality test

		One-Sample Kolmogorov-Smirnov Test	
		Linguistic Intelligence	Creative Thinking
N		160	160
Normal Parameters ^b	Mean	72.14	68.67
	Std. Deviation	15.857	11.908
Most Extreme Differences	Absolute	.073	.067
	Positive	.060	.052
	Negative	-.073	-.067
Test Statistic		.073	.067
Asymp. Sig. (2-tailed)		.037 ^c	.076 ^c

a. Test distribution is Normal.
 b. Calculated from data.
 c. Lilliefors Significance Correction.

Based on the table above, it can be seen that the Kolmogorov-Smirnov test significance value is 0.76, and more than 0.05. This means that the data on the variables in this study are normally distributed.

Linearity Test

The linearity test was carried out in this study to test whether the relationship between the two variables (the independent

variable and the dependent variable) is linear. The purpose of the linearity test is to ascertain whether there is a significant linear relationship between the independent variable (linguistic intelligence) and the dependent variable (creative thinking). Based on the data analysis of the linearity test, the results can be seen in the following table:

Table 3. ANOVA of linearity test

			Sum of Squares	df	Mean Square	F	Sig.
Creative Thinking * Linguistic Intelligence	Between Groups	(Combined)	10035.441	22	456.156	4.995	.000
		Linearity	7634.778	1	7634.778	83.597	.000
		Deviation from Linearity	2400.663	21	114.317	1.252	.219
	Within Groups		12512.002	137	91.328		
Total		22547.444	159				

According to the ANOVA table above, the deviation from the linearity significance score is 0.219, and more than 0.05. This means that the relationship between the independent variable (linguistic intelligence) and the dependent variable (creative thinking) is linear, so it can be concluded that changes in the independent variable will affect the dependent variable.

Results

This study was conducted to investigate the effect of linguistic intelligence on students' creative thinking at MAN 1 Serang City, Indonesia. The following are the results of research data analysis using SPSS version 25:

Table 4. The result of data analysis

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7634.778	1	7634.778	80.891	.000 ^b
	Residual	14912.665	158	94.384		
	Total	22547.444	159			

a. Dependent Variable: Creative Thinking

b. Predictors: (Constant), Linguistic Intelligence

Based on the table above, it can be seen that the significance value of the influence of X variable (linguistic intelligence) on Y variable (creative

thinking) is 0.000 and less than 0.05. This means that there is an influence of language attitudes on writing skills.

Table 5. Model of summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.582 ^a	.339	.334	9.715	.339	80.891	1	158	.000

a. Predictors: (Constant), Linguistic Intelligence
b. Dependent Variable: Creative Thinking

Referring to the Model of the Summary table above, it can also be seen that the correlation (R) value is 0.182 and R Squared is 0.339. This shows that the contribution of variable X (linguistic intelligence) to Y (creative thinking) is 33,9%, while the remaining 66.1% is contributed by other variables not examined in this study.

Discussion

Linguistic intelligence, which is one of the various types of intelligence in the theory of multiple intelligences, plays an important role in influencing a person's creative thinking ability. Linguistic intelligence refers to a person's ability to understand, use, and communicate through verbal and written language. Someone who has high linguistic intelligence tends to be able to process information and communicate using language innovatively and effectively and can describe ideas in the form of interesting stories or arguments. Mohammed (2021) carried out the research with the title *The Relationship between Multiple-Intelligence and Thinking Patterns through Critical Thinking among 10th-grade Students in Private Schools in Abu Dhabi*. He concluded

that there is a positive and strong relationship between Multiple intelligence factors-verbal linguistics, thought patterns, and critical thinking (Mohammed et al., 2021). Fitriani, et al. (2018) conducted a research entitled *Pengaruh Kecerdasan Linguistik terhadap Kemampuan Koneksi Matematis dalam Menyelesaikan Masalah Open Ended Materi Trigonometri* the conclusion that mathematical connection ability requires linguistic intelligence which refers to Howard Gardner's opinion for solving open ended problems that have more than one solution (Fitriani, 2018). Another research carried out by Yi, et al. (2011) entitled *The Role of Multiple Intelligences and Creativity in Students' Learning Style*. The conclusion is that there is a relationship between linguistic intelligence and creative thinking (Yi et al., 2011).

In line with the research results above, referring to the linguistic intelligence coefficient score on creative thinking, as can be seen in the previous section, is 0.000 and less than 0.05. This shows that linguistic intelligence influences creative thinking. Based on the results of research data analysis as explained in the previous

section, linguistic intelligence, which refers to good language skills, will have a significant impact on creative thinking abilities. A deep understanding of elements related to language, such as language structure (syntax), vocabulary, pragmatics, and so on, will have implications for creativity in thinking in speaking or writing well, as well as the ability to express ideas creatively, clearly, and convincingly.

The intelligence possessed by students is not single but consists of various kinds. Intelligence can be measured in various ways. For example, how to solve problems, and create certain works that have cultural value, rhetorical abilities, and other intelligence, although sometimes a person does not realize these intelligences. The theory of multiple intelligences is currently believed to be Gardner's theory of multiple intelligences, one of which is linguistic intelligence. Linguistic intelligence is a person's ability to process and use words very well, orally and in writing. Mastery of linguistic elements and aspects (words, sentences, syntax, pragmatics, etc.) is an important component of this intelligence. Linguistic intelligence has an interactional relationship with the ability to think creatively. In the context of language skills, including writing skills, linguistic intelligence can be a tool that supports a person's creativity in thinking. Ideas, notions, and innovations that are produced through creative thinking processes are expressed using linguistic intelligence both orally and in writing. Apart from that, creative thinking can also support increasing

linguistic intelligence because intelligence is obtained through a deep thinking process to look for ideas, suggestions, answers, discover new things, and so on. The more creative a person is in thinking related to language, the better a person's linguistic intelligence will be.

As stated above, the research results show that there is a relationship between linguistic intelligence and creative thinking. The results of this research have several important implications in various ways as follows:

1. Education

The implication in the field of education is that the results of this research are expected to encourage changes in school curriculum and learning design by placing greater emphasis on the development of linguistic intelligence. Activities such as creative writing, debate, and reading can be increased to stimulate students' creative thinking abilities. In addition, teachers can adopt teaching methods that combine verbal activities and creative thinking, such as group discussions, story creation, and word games. This method can help students develop both types of intelligence simultaneously. Evaluation of student learning outcomes is structured to achieve several aspects of creativity in language, such as the ability to produce new ideas through writing or speech.

2. Advanced Research

Further research related to the results of this study can be carried out to identify the

mechanisms that link linguistic intelligence with creative thinking. Understanding more about this relationship can help in developing more specific strategies to improve these two types of intelligence.

It is also hoped that the results of this research will attract interest from various (interdisciplinary) scientific disciplines, including linguistics, education, psychology and neuroscience, to collaborate and further explore how language and creativity influence each other.

Conclusion

There is an influence that linguistic intelligence has a significant influence on creative thinking. A person's ability to understand, use, and communicate through verbal and written language plays an important role in stimulating and facilitating creative thinking. Linguistic intelligence involves mastery of language, including understanding grammar, vocabulary, and sentence structure can form the basis for someone to communicate clearly and effectively and can use various figures of speech, similes, or analogies to make their writing more lively and interesting. Linguistic intelligence helps connect ideas that may not be directly related, see problems from different points of view, and design strong and interesting narratives. Thus, it can be concluded that linguistic intelligence has an influence on creative thinking and is an important component in the development of innovative ideas and creative problem-solving.

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