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The Correlation between Linguistic Intelligence and Students' Cognitive Engagement: A Study on the First Semester English Department Students at UNP

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Abstract
Low student engagement is one of the problems faced in the implementation of education in Indonesia. It is believed that students' poor level of engagement in the classroom results from their inability to comprehend the instructions given throughout the learning process, which could be caused by their low linguistic intelligence. Linguistic intelligence is a person's ability to use language effectively. This research aims to examine the correlation between linguistic intelligence and students' cognitive engagement. The population in this study were first semester English education department students at Universitas Negeri Padang. This study used total sampling technique. The number of participants in this study was 160 students who were collected by using questionnaires. This study used descriptive quantitative method using Pearson correlation to examine the relationship between two variables; linguistic intelligence (X) and students' cognitive engagement (Y). This study revealed that linguistic intelligence affects students' cognitive engagement. The Pearson correlation results support the findings by showing a value of .417. The relationship between the two variables is positively correlated, indicating that the higher the linguistic intelligence, the higher the students' cognitive engagement.

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INTRODUCTION

Problems in implementing education in Indonesia are very diverse, ranging from issues with the educational system, the applied curriculum, problems involving teachers as teaching staff, and matters involving students as objects of organized education. One of the problems in terms of students is low students' engagement in the learning process (Nasution, 2014). Kristiana et al (2023) reveal that 94, 45% of higher education students in Indonesia have low students' engagement scores.

Additionally, Putri and Yasmin (2023) point out that students' engagement at Universitas Negeri Padang is only at a moderate level.

Students' engagement is a major factor in academic success. Fredricks (2004) defines students' engagement as the involvement of students in the learning process of academic activities that students display in the school and classroom environment. He divides students' engagement into three different dimensions, namely behavioral engagement, emotional engagement, and cognitive engagement. Cognitive engagement, as one part of the three dimensions of students' engagement proposed by Fredricks, is crucial in learning activity to the successful implementation of education (Idris et al, 2018). Students' cognitive engagement, according to Fredricks (2004), is the extent of students' commitment to learning. Cognitive engagement occurs when students memorize to perform self-regulation. Rodriguez (2003) add that students are actively engaged cognitively when using higher order thinking and are totally involved in learning. Without cognitive engagement, students cannot learn meaningfully (Solis, 2008).

Students' cognitive engagement is influenced by several factors. Fredericks (2004) describes that there are two factors namely, internal factor and external factor. External factors include the school environment and classroom environment. Meanwhile, internal factors include student interest and student enjoyment of learning, as well as the spirit of competence in students. Furthermore, Mat, Effendi, and Matore (2020) explain that the influence factors are demographic (gender and socio-economy), contextual (learning strategy, classroom environment, and school background), individual (self-efficacy, academic achievement, behavioral attitudes, emotions, individual competence) and engagement factors (teachers and parents).

According to Gardner (1983), individual competence, which one of the factors that influence student engagement revealed by Mat, Effendi, and Matore (2020), has a close relationship with intelligence. Competence serves as a fundamental bedrock of individuals' characteristics, encompassing their behavioral and cognitive patterns (Spencer, 1993). It functions as a unifying force, equalizing diverse situations and sustaining supportive mechanisms over an extended duration. Meanwhile, intelligence is the ability to solve problems, create products, or offer services of value in a culture (Gardner, 1983). This close relationship makes the better a person's level of intelligence, the better his competence will be.

According to Gardner (1983), humans have a variety of intelligence which is known as multiple intelligences theory. This theory divides intelligence into 8 forms. Each type of intelligence is the basis for certain competencies. One of the multiple intelligences is linguistic intelligence which has a relation with linguistic aspects and language. Gardner says that linguistic intelligence is the capacity to use words effectively, whether orally or in writing. It can be concluded that someone with high linguistic intelligence will tend to have competence in writing, speaking, and understanding language.

In classroom learning process, linguistic intelligence is important for students because by having linguistic intelligence, students cannot only communicate well, but also can convey ideas, thoughts, feelings, and messages to other people or parties. By having linguistic intelligence, students can take advantage of their linguistic knowledge to realize it in aspects of language skills. Each student,

however, has a varied amount of linguistic intelligence (Gardner, 1983). Students with strong linguistic intelligence will find it easier to explain, prohibit, and share their ideas with others. For example, they will be fluent in debate activities, happy to read books, simple to memorize words and engage in lessons. In brief, linguistic intelligence greatly influences the way students use language in learning process.

Linguistic intelligence that is related to someone's individual competence may also correlated to the level of student's engagement. Research that focusses on examining the correlation of linguistic intelligence and students' cognitive engagement has not yet been discovered by the researcher as long as this research processed. The researcher is interested in conducting research that has not been carried out by other researchers. The purpose of this research is to find out the correlation of student's linguistic intelligence and student's cognitive engagement.

METHOD

This research used a descriptive design with quantitative approach to explain the data. Pearson's correlation product moment approach used in this study to analyze the correlation between two variables. This research used total sampling method. The sample of this research was 160 students divided into 7 classes. The data gathered through questionnaire. Researcher make use of adapted questionnaire from MIDAS (Multiple Intelligence Developmental Assessment Scale) to examine the linguistic intelligence of students and adopted CES-E (Cognitive Engagement Scale - Extended) to analyze the students' cognitive engagement. Linguistic intelligence questionnaire consists of 20 statements and students' cognitive engagement questionnaire consists of 12 statements. Linguistic intelligence assesses three indicators according to Shearer (1997): expressive sensitivity, rhetorical skill, and written-academic ability. Students' cognitive engagement questionnaire assesses three indicators according to Charsa (2013): deep cognitive engagement, shallow cognitive engagement and no cognitive engagement. The questionnaires answered with 5-point *likert* scale. Researcher distributed the questionnaire through Google form link.

In analyzing the data, researcher used *Sturges* formula (Joeharno and Zamli, 2013) to categorize the level of linguistic intelligence and students' cognitive engagement. The categorization was as follow:

Table 1. Linguistic intelligence classification

Score	Description
74 – 100	High
47 – 73	Middle
20 – 46	Low

Table 2. Students' cognitive engagement classification

Score	Description
44 – 60	Deep

28 – 43	Shallow
12 – 27	No engagement

The data was evaluated using SPSS, with statistical calculations used to assess the relationship of the two variables. A normality test was initially performed to determine whether the sample data came from a population with a normal distribution within a suitable range. Following that, a linearity test was used to see whether an obvious linear connection existed between the variables. For an effective data collection, it is vital to create a linear relationship between the two variables.

After the conditions were fulfilled, the data of the two variables were available for analysis. As a result, a correlation study was performed using SPSS to assess the extent of the association between X and Y. The Pearson Product-Moment Coefficient was applied to examine the correlation between these variables.

RESULT AND DISCUSSION

Research Finding

1. Students' linguistic intelligence

Based on the data analyzed, the lowest score obtained among students was 46 and the highest score was 98. The most frequent score was 66. The median of the data was 70. The average score was 69,92 with standard deviation value was 9.449. Then, based on the calculation of the measurement scale, it was found that the score interpretation of linguistic intelligence was as follows.

Table 3. Interpretation of linguistic intelligence score

Score	Interpretation	Total participant (%)
74 – 100	High	58 (36%)
47 – 73	Middle	101 (63%)
20 – 46	Low	1 (1%)

From three indicator being tested, the dominant indicator of the first semester English education students at Universitas Negeri Padang was written-academic ability. The value of written-academic ability mean was 24.48 with standard deviation value was 3.859.

2. Students' cognitive engagement

Based on the data analyzed, students get the lowest score for 33 and the highest score for 54. The median of the data was 42. Average score among students was 41.64 with standard deviation values was 3.804. Furthermore, based on the calculation of the measurement scale, it was found that the score interpretation of linguistic intelligence was as follows.

Table 4. Interpretation of students' cognitive engagement score

Score	Interpretation	Total participant (%)
44 – 60	Deep	46 (29%)
28 – 43	Shallow	114 (71%)

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12 – 27	No engagement	0 (0%)

3. Normality test

Table 5. Normality test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		160
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	3.45824574
Most Extreme Differences	Absolute	.043
	Positive	.043
	Negative	-.028
Test Statistic		.043
Asymp. Sig. (2-tailed)		.200[c,d]

The data was interpreted as normal if $p > 0.05$. The data categorized as not normal if $p < 0.05$. The Kolmogorov-Smirnov test was used in SPSS to determine the normality of the data. The table above display the outcome of the normality test. The table show suggests that $p > 0.05$ with value as .200. This outcome indicated that the data exhibited normal distribution and suitable for further study.

4. Linearity test

Table 6. Linearity test

		Sum of Squares	df	Mean Square	F	Sig.
Between Groups	(Combined)	849.027	41	20.708	1.683	.016
	Linearity	399.139	1	399.139	32.444	.000
	Deviation from Linearity	449.888	40	11.247	.914	.618
Within Groups		1451.667	118	12.302		
Total		2300.694	159			

The significant correlation indicates a value of .618 between two variables, linguistic intelligence and students' cognitive engagement. It means that the data was linear because the probability exceeded the threshold of 0.05.

5. Correlation analysis

Table 7. Correlation analysis

		Linguistic Intelligence	Students' Cognitive Engagement
Linguistic Intelligence	Pearson Correlation	1	.417**
	Sig. (2-tailed)		.000
	N	160	160
Students' Cognitive Engagement	Pearson Correlation	.417**	1
	Sig. (2-tailed)	.000	
	N	160	160

A data can be considered correlated if Sig.2-tailed is < .05 and not correlated if Sig.2-tailed is > .05. From the table above, the probability (p) significance"(Sig.2-tailed)"was .000. This asserts that there is a correlation between linguistic intelligence and pupils' cognitive engagement. The Pearson correlation value between linguistic intelligence and students' cognitive engagement was .417. The investigation identified a moderate correlation (ranging from .400 to .599) according to Guilford (1956). It also show a positive value from the Pearson correlation product moment, which means the higher the linguistic intelligence, the higher the students' cognitive engagement.

Discussion

Statistical descriptive analysis reveals that the average linguistic intelligence score of the first semester English department students at Universitas Negeri Padang was 69.91. Therefore, the linguistic intelligence of first-year students can be categorized in the middle level. Students are more dominant in the written-academic ability indicator which shows a mean of 24.48. The results of this investigation have answered the research question about how the level of linguistic intelligence of first semester English department students at Universitas Negeri Padang. The linguistic intelligence test results show that among the students, the scores vary from low scores to high scores. This discovery in line with Gardner's theory which claims that linguistic intelligence is universal and varies in different individual. In addition, the result shows that students highlight their favourite side more in terms of writing. This finding synergizes with the previous research conducted by Solehah (2017) which reveals that linguistic intelligence has a 49.7% effect on students' writing ability. The relationship between linguistic intelligence and writing ability is able to improve. This statement was conveyed by Senima (2022). She reveals that linguistic intelligence was found to greatly affect students' writing achievement.

Majority of students showed a large deep cognitive engagement attitude with a mean of 16.16. However, the data concluded that the average score of students' cognitive engagement was 41.64. The first semester English education students at Universitas Negeri Padang seemed to be having a shallow cognitive engagement.

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Shallow cognitive engagement is a surface-level approach to assessments, where students rely on minimal effort or shortcuts, for example, guessing on complex questions or providing only the minimally required responses, rather than actively processing or understanding the content (Charsa, 2013). The findings in this study are comparable to the earlier research performed by Putri and Yasmin (2023), which indicate that the students' participation at Universitas Negeri Padang were in the moderate category.

The results of Pearson product moment clarified that there is a positive relationship between linguistic intelligence and students' cognitive engagement. Statistical analysis revealed a moderate relationship between linguistic intelligence and students' cognitive engagement. Pearson correlation value between linguistic intelligence and students' cognitive engagement was .417. Based on the findings of this study, there is a positive correlation between linguistic intelligence and students' cognitive engagement. This aligns with Mat, Effendi, and Matore (2022), who emphasized that individual competence is a key factor in student engagement. As Gardner (1983) pointed out, intelligence, including linguistic intelligence, forms the foundation of such competence. Thus, these findings reinforce the idea that linguistic intelligence plays a central role in fostering cognitive engagement by enhancing individual competence. The implication of these results is the importance of developing linguistic intelligence as part of educational strategies to improve student engagement.

CONCLUSION

This research proposed to examine the correlation between linguistic intelligence and students' cognitive engagement. The data analysis results demonstrate a correlation between linguistic intelligence and students' cognitive engagement. Linguistic intelligence contributes moderately to students' cognitive engagement, according to the Pearson correlation value. The results of this investigation demonstrated a positive connection. Given the positive relationship involving the two variables, it can be argued that the greater the degree of linguistic intelligence, the higher the level of cognitive engagement among students.

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