

The Implication of Lecture-Based Learning and Inquiry-Based Learning on Writing and Reading Score of TOEFL-IBT

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Abstract

This study aims to investigate the impact of implementing Lecture-Based Learning and Inquiry-Based Learning methods on the Writing and Reading scores of the TOEFL-IBT. The research adopts a quantitative approach and employs an associative research design. A sample of 40 participants was selected using purposive sampling from the population of students at Universitas Kristen Immanuel, subsequently divided into two classes that utilized different teaching methods. Data, consisting of Writing and Reading scores, were collected through TOEFL-IBT test results from the two classes, each employing a distinct learning method. The data were then analyzed using both multivariate and univariate MANOVA tests. The findings indicate a significant difference in Writing and Reading scores between the two classes that applied Lecture-Based Learning and Inquiry-Based Learning methods. While the applied methods had a simultaneous effect on Writing and Reading scores, the distinct methods exhibited a more pronounced influence on Writing scores compared to Reading scores in the TOEFL-IBT assessment.

Keywords: Lecture-Based Learning, Inquiry-Based Learning, Writing, Reading, TOEFL-IBT

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INTRODUCTION

To enhance the English language proficiency of students and prepare them for global competition, it is essential to administer internationally standardized English tests. One such assessment is the Test of English as a Foreign Language – Internet-Based Test, commonly referred to as TOEFL-IBT. This examination evaluates an individual's skills in Listening, Reading, Writing, and Speaking. Among these four competencies, students often face challenges in Writing and Reading, which hinder their ability to achieve optimal scores on the TOEFL-IBT.

In the TOEFL-IBT, the writing section is divided into two components: the Integrated Writing Task and the Academic Discussion Writing Task. In the Integrated Writing Task, participants are required to read a brief text and listen to a related lecture. Subsequently, they must articulate the connection between the reading and the lecture in a written response. In the Academic Discussion Writing Task, participants are tasked with responding to an academic discussion involving a professor and two students, also in written form. For the reading comprehension assessment, participants must carefully read two texts and answer a total of ten multiple-choice questions related to each text.

To produce high-quality writing that effectively comprehends and addresses questions from academic readings, students require intensive and continuous learning support (Yerukneh et al., 2023). It is essential to select appropriate teaching methods that can optimally facilitate students in achieving maximum scores in Writing and Discussion sessions. According to (Potot, Kyamko, et al., 2023), the choice of effective teaching strategies can significantly enhance students' enthusiasm and motivation to improve their Writing and Reading skills. Given that the participants in the TOEFL-IBT test are college students, the researcher has opted to implement a Lecture-Based Learning approach. Furthermore, the researcher considers it crucial to compare Lecture-Based Learning with another method, Inquiry-Based Learning, to determine which is more effective, particularly since Lecture-Based Learning is teacher-centered while Inquiry-Based Learning is student-centered. Consequently, the researcher divided the two classes and applied different teaching methods—Lecture-Based Learning and Inquiry-Based Learning—to assess improvements in Writing and Reading scores on the TOEFL-IBT.

According to (Ssemugenyi, 2023), Lecture-Based Learning is an instructional method in which the educator serves as the primary source of information during the learning process. All forms of instruction and knowledge are conveyed directly to learners concerning the target material to be achieved. In a TOEFL-IBT class, the instructor provides a detailed explanation of the theoretical framework related to academic writing and techniques for extracting information from academic texts. The vocabulary introduced is entirely derived from the learners and communicated to the students. This teaching method is regarded as a traditional approach and is widely utilized in foreign language instruction across various levels. It emphasizes the necessity for learners to concentrate on the continuous explanations provided by the instructor and to absorb the knowledge imparted (Haryanti et al., 2023).

On the other hand, Inquiry-Based Learning is an instructional approach that allows learners to take a more active role in posing questions, which can subsequently lead to additional content relevant to the learning objectives (Verma et al., 2022). In this framework, the educator acts primarily as a facilitator rather than the sole source of knowledge and materials. This method encourages learners to engage in self-exploration while studying related content through experimental means (Kong, 2021). In relation to the TOEFL-IBT, Inquiry-Based Learning enables students to articulate their ideas and writing styles within an academic context, while also confirming their vocabulary with the instructor. The educator presents a case study and associated problems, prompting learners to distill the essence of the case and develop it into written form. When it comes to reading comprehension, students are encouraged to openly express their reasoning for selecting answers to reading-related questions, fostering a collaborative discussion.

Numerous prior studies have concentrated on enhancing learners' Writing and Reading skills. Research examining the effects of Lecture-Based Learning and Inquiry-Based Learning on the improvement of English language proficiency has also been extensively conducted. One notable study by (Hafeez, 2021) investigated the influence and strategies of Lecture-Based Learning and Project-

Based Learning within diverse educational contexts. The findings indicated that Project-Based Learning yielded superior outcomes compared to Lecture-Based Learning in terms of learning results and cognitive abilities. A similar investigation by Amelia & Prystiananta (2021) focused on the application of Inquiry-Based Learning to enhance the ability to write descriptive texts. The results demonstrated that the quality of learners' descriptive writing significantly improved when subjected to Inquiry-Based Learning interventions. Additionally, Wale & Bishaw (2020) explored the impact of Inquiry-Based Learning methods on students' critical thinking skills in English classes. Their findings suggested that Inquiry-Based Learning is recommended for implementation, as it effectively enhances skills related to interpretation, analysis, evaluation, and other aspects of critical thinking.

Researchers have reviewed previous studies and identified several new avenues for investigation related to Lecture-Based Learning and Inquiry-Based Learning. This study aims to compare these two contrasting educational methods, specifically focusing on their effects on students' scores in Writing and Reading sections of the TOEFL-IBT. Additionally, the research seeks to evaluate how Lecture-Based Learning and Inquiry-Based Learning influence students' abilities to produce diverse academic writing, extending beyond mere descriptive tasks. While Wale & Bishaw (2020) employed ANOVA for their statistical analysis, this study utilizes MANOVA to assess the data, incorporating two dependent variables and two independent variables. Consequently, this approach is expected to provide a more comprehensive understanding of the comparative impacts of Lecture-Based Learning and Inquiry-Based Learning.

Consequently, the researcher has formulated the problem in this study as follows.

1. Is there a significant difference between the Writing and Reading scores of students in the TOEFL-IBT when comparing those taught through Lecture-Based Learning and those taught through Inquiry-Based Learning?
2. Is there a significant impact of different teaching methods on the Writing and Reading scores of students in the TOEFL-IBT?

RESEARCH METHOD

The research conducted is quantitative in nature, employing an associative research strategy. The researcher adopts an associative approach to explore the relationships between variables, thereby elucidating the implications of these variables. In this study, the independent variables are Lecture-Based Learning and Inquiry-Based Learning methods, while the dependent variables are the Writing and Reading scores on the TOEFL-IBT. The population for this research consists of active students from various semesters and disciplines at Universitas Kristen Immanuel, Yogyakarta. Utilizing purposive sampling techniques, the researcher obtained a total of 40 samples, which were divided into two groups: 20 samples in the class subjected to Lecture-Based Learning and 20 samples in the class subjected to Inquiry-Based Learning.

The data collection process was conducted using the TOEFL-IBT test administered to 40 students from two distinct classes following the

implementation of Lecture-Based Learning and Inquiry-Based Learning methods over 15 sessions. The assessment of writing skills included two components: the Integrated Writing Task and the Academic Discussion Writing Task. In contrast, the reading assessment comprised two reading passages, each accompanied by 10 multiple-choice questions labeled A through D.

Upon the collection of data, it was subsequently subjected to descriptive statistic, normality test and homogeneity test. Following these assessments, the data was analyzed using a series of MANOVA tests to evaluate the hypotheses and address the research questions posed in this study. The MANOVA test was employed to examine the effects of two independent variables, namely Lecture-Based Learning and Inquiry-Based Learning, on two dependent variables, which are Writing and Reading scores on the TOEFL IBT. All statistical tests were conducted utilizing SPSS version 22.

RESEARCH RESULTS AND DISCUSSION

Descriptive Statistic

Table 1. Result of Descriptive Statistic

	Method	Mean	Std. Deviation	N
WritingScore	L-BL	75.67	1.910	18
	I-BL	86.33	5.087	18
	Total	86.33	5.087	18
ReadingScore	L-BL	81.39	6.792	18
	I-BL	80.61	6.581	18
	Total	80.61	6.581	18

Source: processed data by SPSS 22 (2024)

Based on the data presented in Table 1, the average Writing score in the Inquiry-Based Learning class, which is 86.33, surpasses the average Reading score in the Lecture-Based Learning class, recorded at 75.67. Furthermore, the average Reading score in the Lecture-Based Learning class, standing at 81.39, is higher than the average Reading score in the Inquiry-Based Learning class, which is 80.61. This indicates a distinct influence of the respective teaching methods, Lecture-Based Learning and Inquiry-Based Learning, on the TOEFL-IBT Writing and Reading scores.

Normality Test

One of the prerequisites for conducting a MANOVA test is that the data must follow a normal distribution (Ateş et al., 2019). Consequently, it is essential to perform a normality test prior to the analysis. The following presents the results of the normality test conducted on the data intended for analysis.

Table 2. Result of Normality Test

	Method	Shapiro-Wilk		
		Statistic	df	Sig.
WritingScore	L-BL	.923	18	.147
	I-BL	.878	18	.024
ReadingScore	L-BL	.908	18	.078
	I-BL	.909	18	.083

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Source: processed data by SPSS 22 (2024)

The Shapiro-Wilk normality test is employed due to the sample size being less than 50. According to the data presented in Table 1 above, the significance values for all variables exceed 0.05, indicating that the data in this study is normally distributed.

Homogeneity Test

In addition to normality testing, homogeneity testing is also a prerequisite for conducting MANOVA. (Zhou et al., 2023) explained that the purpose of homogeneity testing is to ascertain whether the data collected exhibit similar characteristics, despite the application of different treatments. In studies employing MANOVA as a statistical analysis method, Box's Test of Equality of Covariance Matrices is utilized to assess homogeneity. The following presents the results of the homogeneity test conducted on the collected data.

Tabel 3. Result of Homogeneity Test

Box's M	15.286
F	4.770
df1	3
df2	208080.000
Sig.	.347

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Method

Source: processed data by SPSS 22 (2024)

According to the data presented in Table 3, the significance value (Sig.) is 0.347. This value exceeds the threshold of 0.05, indicating that the covariance matrix of all the variables is homogeneous. Given that the data is normally distributed and homogeneous, the prerequisites for conducting a MANOVA test are satisfied, allowing for progression to the subsequent analysis.

MANOVA Test

In this study, hypothesis testing was conducted using MANOVA. MANOVA, or Multivariate Analysis of Variance, is a statistical analysis method employed to ascertain whether there are significant differences between two or more dependent variables that are related to one or more independent variables (Ntumi, 2021).

Researchers first formulate the hypothesis to be tested. The hypothesis in this study is:

H₀ : There is no significant effect of the learning model on the TOEFL-IBT writing and reading scores of the students.

H_a : There is a significant effect of the learning model on the TOEFL-IBT writing and reading scores of the students.

Following the establishment of the hypothesis, the subsequent results of the MANOVA test are presented to evaluate the aforementioned hypothesis.

Table 4. Result of Multivariate Test

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Square	
Intercept	Pillai's Trace	.998	9851.122 ^b	2.000	33.000	<,001	.998
	Wilks' Lambda	.002	9851.122 ^b	2.000	33.000	<,001	.998
	Hotelling's Trace	597.038	9851.122 ^b	2.000	33.000	<,001	.998
	Roy's Largest Root	597.038	9851.122 ^b	2.000	33.000	<,001	.998
Method	Pillai's Trace	.673	33.987 ^b	2.000	33.000	<,001	.673
	Wilks' Lambda	.327	33.987 ^b	2.000	33.000	<,001	.673
	Hotelling's Trace	2.060	33.987 ^b	2.000	33.000	<,001	.673
	Roy's Largest Root	2.060	33.987 ^b	2.000	33.000	<,001	.673
a. Design: Intercept + Method							
b. Exact statistic							

Source: processed data by SPSS 22 (2024)

Based on the analysis presented in Table 4, the significance value (Sig.) is 0.001 across the board. This value is less than the threshold of 0.05, leading to the conclusion that the null hypothesis (H₀) is rejected while the alternative hypothesis (H_a) is accepted. Consequently, it can be inferred that there is a

significant effect of the learning model on the writing and reading scores of students in the TOEFL-IBT examination when considered simultaneously.

To assess the impact of the learning methods on each variable individually, a univariate test was conducted. This type of analysis is employed to evaluate the following hypotheses.

H₀ : There is no significant effect of the learning model on the TOEFL-IBT writing and reading scores of the students.

H_a : There is a significant effect of the learning model on the TOEFL-IBT writing and reading scores of the students.

Table 5. Test of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ReadingScore	5.444 ^a	1	5.444	.122	.729	.004
	WritingScore	1024.000 ^b	1	1024.000	69.355	<,001	.671
Intercept	ReadingScore	236196.000	1	236196.000	5281.401	<,001	.994
	WritingScore	236196.000	1	236196.000	15997.339	<,001	.998
Method	ReadingScore	5.444	1	5.444	.122	.729	.004
	WritingScore	1024.000	1	1024.000	69.355	<,001	.671
Error	ReadingScore	1520.556	34	44.722			
	WritingScore	502.000	34	14.765			
Total	ReadingScore	237722.000	36				
	WritingScore	237722.000	36				
Corrected Total	ReadingScore	1526.000	35				
	WritingScore	1526.000	35				

a. R Squared = .004 (Adjusted R Squared = -.026)

b. R Squared = .671 (Adjusted R Squared = .661)

Source: processed data by SPSS 22 (2024)

Based on the analysis presented in Table 4, the significance value (Sig.) for the Reading scores is 0.729. This value exceeds the threshold of 0.05, leading to the acceptance of the null hypothesis (H₀) and the rejection of the alternative hypothesis (H_a). Consequently, it can be concluded that there is no significant effect of the existing teaching methods on the TOEFL-IBT Reading scores of the students. Conversely, the significance value for the Writing scores is 0.001. This value is below 0.05, resulting in the rejection of H₀ and the acceptance of H_a.

This indicates a significant impact of the current teaching methods on the TOEFL-IBT Writing scores of the students.

Discussion

Based on the results of the descriptive statistical analysis conducted, there exists a notable difference in the average scores for Reading and Writing between the classes utilizing Lecture-Based Learning and those employing Inquiry-Based Learning methodologies. Specifically, the average Writing score in the Inquiry-Based Learning class is significantly higher than that in the Lecture-Based Learning class. This finding suggests that students are more adept at generating writing ideas when they engage in active discussions with peers and pose numerous questions to the instructor, thereby facilitating a deeper exploration of inspiration (Myhill et al., 2023). Student-centered learning approaches enhance their comprehension of the topics addressed during Writing sessions. Conversely, the average Reading score in the Lecture-Based Learning class surpasses that of the Inquiry-Based Learning class, albeit by a minimal margin of 1.08. This indicates that the Lecture-Based Learning method is more effective in aiding students' understanding, ultimately leading to better Reading scores. It underscores the necessity for students to receive comprehensive instruction and vocabulary guidance from educators to effectively comprehend reading materials (Patty, 2023).

Through multivariate testing, it was determined that the instructional methods employed in the classroom, namely Lecture-Based Learning and Inquiry-Based Learning, exert a simultaneous influence on the Writing and Reading scores of the TOEFL-IBT. This finding addresses the second research question regarding the differential impact of these methods on enhancing TOEFL-IBT Writing and Reading scores. Univariate analysis revealed that the existing instructional methods do not significantly affect Reading scores, while they do have a notable impact on Writing scores. This is further supported by the minimal average difference in Reading scores between the two classes utilizing different methods, contrasted with a substantial average difference in Writing scores. This indicates that to enhance TOEFL-IBT Writing scores, it is essential to adopt a method that allows students ample opportunities to explore their writing abilities through discussions and frequent inquiries with instructors (Kandel & Kandel, 2023). Additionally, combining Inquiry-Based Learning with Lecture-Based Learning may provide structured guidance for students in developing their writing skills. Conversely, neither Lecture-Based Learning nor Inquiry-Based Learning demonstrated a significant effect on improving Reading scores, suggesting the necessity for alternative instructional methods that could better support the enhancement of Reading scores in the TOEFL-IBT.

CONCLUSION

Based on the analysis and discussion presented, it can be concluded that there is a significant difference between the Writing and Reading scores in two classes employing different teaching methods, specifically Lecture-Based Learning and Inquiry-Based Learning. Furthermore, there is a notable simultaneous effect of the different teaching methods on the Writing and Reading scores of students in the TOEFL-IBT assessment. However, it was observed that the impact of the differing teaching methods is considerably more pronounced in enhancing the Writing scores of students compared to their Reading scores, indicating a need for alternative teaching strategies.

One limitation of this study is the insufficient visibility of students' motivation in learning TOEFL-IBT, particularly in classes utilizing the Inquiry-Based Learning method. This lack of motivation complicates the researchers' ability to achieve the desired outcomes. Furthermore, students tend to become increasingly passive in classes that employ the Lecture-Based Learning approach. Consequently, the role of the instructor becomes increasingly critical in both types of classes that implement these differing methodologies.

This study is anticipated to serve as a reference for other TOEFL-IBT instructors aiming to enhance students' Writing and Reading scores through the implementation of Lecture-Based Learning and Inquiry-Based Learning methodologies. Future researchers are encouraged to incorporate additional variables, specifically Listening and Speaking, to assess whether the Lecture-Based Learning and Inquiry-Based Learning approaches also exert an influence on these two score areas.

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