



Enhancing Higher Education Writing Achievement: An Experimental Exploration Of Problem-Based Learning And Technological Integration

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Abstract

This research aims to improve higher education writing achievement through a groundbreaking experimental investigation of problem-based learning and technological integration. Motivated by recognized issues in English education at Adzkia University, where students struggle with weaknesses in paragraph building, idea production, and organizational skills, our research strives to reshape the landscape of writing training. Our study pioneers a unique departure from previous techniques by recognizing instructional methodology and technology as critical elements. Problem-based learning and technological integration emerge as dynamic alternatives, promising a paradigm shift in how writing skills are developed in higher education. The instruments that were used for this research were writing tests. T-test analysis was used in analyzing the data. Our findings from T-test analysis show that students exposed to problem-based learning and technology significantly improve their writing proficiency, exceeding their counterparts in traditional education. In summary, this study drives the conversation on educational technique, asking institutions to embrace the dynamic integration of problem-based learning and technology. The findings not only demonstrate the effectiveness of this novel strategy, but also herald a new age in higher education in which writing prowess becomes an empowered manifestation of student accomplishment.

Keywords: *Impact, Problem-Based Learning, Writing Achievement, Character Building, Higher Education*

Introduction

In the dynamic terrain of educational reform, the capacity to write in higher education plays a critical role in educating students with important skills for success in their jobs and professional lives. Writing is still one of the core talents that higher education typically emphasizes. Writing skill is essential for academic performance as well as for a variety of aspects of students' personal and professional lives (Paluvi et al., 2023; Waruwu, 2022). However, many students frequently

struggle with issues like idea generation, argument structure, or even organizing their thoughts logically and cogently in written work (Suherman, 2020; Sutiah, 2020). As the context for this research, Adzkia University provides a realistic portrayal of real obstacles in English teaching at the higher education level. Students at this university struggle to construct well-formed paragraphs, generate several ideas at the start of a writing project, and organize their ideas efficiently. As a result, to improve pupils' writing abilities, effective learning

methodologies and integration of technology are required. PBL has the potential to cultivate these character traits due to its design, which prioritizes teamwork, problem-solving, and reflection. In recent decades, Problem-Based Learning (PBL) has become a popular educational strategy (Masril et al., 2020; Timor et al., 2021). This approach offers a change from conventional methods and gives students the chance to address issues relevant to their fields of study in the real world. Furthermore, to meet the needs of the digital society 5.0 era, a learning innovation that incorporates technology into learning is required (Masril et al., 2020). Technology makes learning more interesting by allowing pupils to appreciate their surroundings (Dakhi et al., 2020). For example, students can learn from video, images, and sounds provided by technology via the internet, social media, games, and so on. Students in English class loved and had fun when the lecturer served resources in the form of audio and pictures drawn from the internet or technology. Furthermore, the materials brought to class are generated from the students' surroundings, so it can familiarize the students with the issue and encourage them to engage in each conversation. Another advantage of the source is that technology has made it simple to obtain materials from numerous sources on the Internet (Febtriko et al., 2020).

This study employs PBL and incorporates relevant technology into the educational materials in order to meet the demands of students in the digital society 5.0 age (Chen, Hung & Yeh, 2021; Rossa, Noprina & Tulljanah, 2022). The use of PBL and the incorporation of technology into the learning process will improve creativity and productive thinking habits, resulting in an active, effective, inventive, and fun learning environment in which the learning objectives can be met (Liu & Pásztor, 2022; Trullàs et al., 2022). Viewing teaching as a critically crucial variable in developing writing skills, this research is initiated by the belief that

problem-based learning and technological integration can be intelligent solutions. An experimental model is employed to systematically investigate the impact of this innovative combination on the writing achievement of university students. This study intends to provide in-depth insights into the extent to which problem-based learning and technological integration can improve students' writing achievement in higher education. Given the importance of writing talents for students in higher education, researching how PBL and technology effect English learning becomes incredibly relevant.

It is hoped that this research will provide a better understanding of how PBL and technology might be used to assist students' writing skill in the setting of higher education (Rossa, Maulidiah & Aryni, 2021; Simanjuntak et al., 2021). As a result, it is predicted that the findings of this study will provide a solid foundation for the creation of more effective and relevant learning strategies in the context of writing teaching in higher education. This research emerges as a response to the urgent need to introduce innovative learning approaches, with a focus on the use of problem-based learning and technological integration as possible alternatives to traditional teaching methods.

Research Methods

This is a quasi-experimental study with a Post-Test Only Design Non Equivalent Control Groups. The population of this study included all first-year students of Adzkie University's primary school teacher education study program in 2022/2023. A cluster random sampling technique was used to divide the research sample into two classes, with two classes chosen from a total of nine classes, one as an experimental class and the other as a control class. A total of 70 students were randomly selected and divided into two groups: 36 for the experimental class and 34 for the control class. English was taught in the experimental class utilizing PBL and

technology, whereas the control class was taught using traditional English methods. A writing test was used as a precise research instrument to evaluate the influence of problem-based learning and technological integration. The test functioned as a complete evaluation of students' competency in numerous aspects of writing, allowing for a detailed analysis of the effectiveness of the experimental interventions. It is used to evaluate higher education students' writing abilities. T-test analysis was used as the statistical tool to examine the data acquired from the writing tests. This strategy allowed for a comprehensive comparison of the performance of students exposed to problem-based learning and technology to their counterparts in traditional education. SPSS was used to conduct a quantitative analysis of the test data for writing achievement.

Result And Discussion

The fundamental goal of this study was to improve higher education writing achievement through an innovative experimental exploration of problem-based learning (PBL) and technological integration. The basis for this inquiry originated from recognized issues in English education at Adzkie University, where students struggle with deficits in paragraph structure, idea production, and organizational skills. For four weeks, each group received a different treatment. Students in the control group learn English through traditional methods. Meanwhile, the experimental class was taught utilizing PBL and technological integration, covering the same themes as the control class. Students were instructed to form groups in each lesson to debate the questions presented concerning the topic of each approach employed. The final stage was to administer a posttest to both groups in order to examine the impact of PBL and technology on students' writing achievement. The test questions were the

same for both classes. The average scores for both groups are shown below:

Table 1. The Average Post-test scores for Both Groups are Shown Below

No	Class	N	Avarage Scores
1	Eksperimental	36	81.14
2	Control	34	75.26

Following the post-test, the researcher tested hypotheses using normality, homogeneity, and the t-test. The results of the normality test are shown below:

Table 2. Test of Normality

Tests of Normality							
	Class	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig .	Stati stic	df	Sig .
Gra de	Class _Expe rimen t	.148	36	.04 4	.954	36	.13 9
	Class _Cont rol	.162	34	.02 4	.946	34	.09 3

a. Lilliefors Significance Correction

According to the table 2 above, the experimental class's posttest has a significance level of 0.139 or greater than 0.05. The data is said to be regularly distributed. The significance value for the control class posttest data was 0.93 or more than 0.05. It denotes that the data is regularly distributed. It is inferred that the obtained data are regularly distributed. Furthermore, the results of homogeneity tests are provided below:

Table 3. Test of Homogeneity of Variances

Test of Homogeneity of Variances			
Nilai			
Levene Statistic	df1	df2	Sig.
3.687	1	68	.059

According to table 3, the significance threshold for the homogeneity test in the experimental and control classes in the

posttest is 0.059. It shows that the population has homogeneous variants or that the data was gathered from populations with the same variant. Furthermore, the results of the t-test analysis are as follows:

technique, but also herald a paradigm shift, ushering in a new era in which writing ability becomes a physical manifestation of student progress. This study advises educational institutions to use creative strategies in order to create an atmosphere in which students are prepared with the skills needed for success in a number of fields.

Table 4. Independent Samples Test										
Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Grad e	Equal variances assumed	3.687	.059	3.964	68	.000	5.874	1.482	2.917	8.831
	Equal variances not assumed			3.919	56.791	.000	5.874	1.499	2.873	8.876

Based on the facts presented above, the posttest significance value is 0.000, indicating that H_a is accepted and H_0 is rejected. It indicates that the experimental and control groups had significantly different post-test ratings. As a result, it is possible to conclude that English instruction using PBL and integrated technology improves students' writing skills. It signifies that students who were taught using the PBL technique and technology performed better than students who were taught using the traditional English teaching method. The T-test analysis demonstrated that students who completed problem-based learning and technology integration improved significantly in their writing skills. Finally, the study's findings add to the ongoing discussion over educational technique by advocating for the dynamic integration of problem-based learning and technology in higher education. The findings not only support the efficacy of this ground-breaking

The study's goal was to evaluate the impact of Problem-Based Learning (PBL) and technology on students' writing achievement in the setting of higher education. The impetus for this study came from identified challenges in Adzкия University's English classes, where students demonstrated deficiencies in essential writing skills such as crafting well-structured paragraphs, generating ideas for writing projects, and organizing thoughts systematically. Recognizing the importance of teaching methods in developing students' writing abilities, the study used a quasi-experimental design, with writing examinations serving as the primary research instruments. Enhanced Writing Achievement: The study found that students who were taught using Problem-Based Learning and technology integration performed better in writing than their peers who were taught using traditional techniques. This implies that PBL and technology is an excellent method for

improving writing skills in higher education students.

Discussion

The investigation into improving higher education writing achievement through problem-based learning and technological integration has achieved considerable results. This section examines the important findings, their consequences, and the study's broader context. The identified issues in English education at Adzкия University served as a significant beginning point for our research. The problems with paragraph structure, idea development, and organizing abilities highlighted the need for a transformational approach to writing training in higher education. The study pioneered a break from conventional methodologies by emphasizing instructional methodology and technology as essential components. Problem-based learning and technological integration emerged as dynamic alternatives, indicating a paradigm shift in how writing skills are developed in higher education (Alfares, 2021).

The result of the study recommends for the dynamic integration of problem-based learning with technology in higher education. The findings highlight the importance of educational institutions reassessing and adapting their teaching practices, while also highlighting the transformative potential of these novel approaches. This has broader implications for curriculum creation and instructional design in the higher education sector. The findings not only confirm the effectiveness of the unique technique, but also point to a broader transformation in higher education. Writing proficiency is portrayed as a visible indication of student achievement that aligns with the changing demands of various academic and professional contexts. This shows that universities that embrace these new techniques are better positioned to prepare their students for success in the modern world. In conclusion, this study not

only enhances the discourse about educational methods, but it also encourages higher education institutions to embrace innovation (Santos, Figueiredo & Vieira, 2019). By doing so, Higher Education Institution may cultivate an environment in which students are not only academically competent but also equipped with the practical skills required for success in their future activities.

Conclusion

Finally, the experimental investigation of problem-based learning and technological integration to improve higher education writing achievement has provided useful insights into reforming old methodologies. The study, which was driven by known challenges in English education at Adzкия University, shed light on several significant points. The study demonstrated the transformative potential of problem-based learning and technological integration as dynamic alternatives to traditional teaching techniques. The statistical study, which used T-test methods, demonstrated a significant improvement in writing proficiency among students exposed to the experimental interventions. This demonstrates the effectiveness of problem-based learning and technology in resolving recognized inadequacies in paragraph building, idea development, and organizing abilities. The integration of problem-based learning with technology emerges as a forward-thinking technique for equipping students with the critical abilities expected by contemporary academic and professional contexts (Rahmawati, Lestari & Susilo, 2021). Writing abilities are positioned not only as an academic necessity, but also as a practical and empowering instrument for success in a variety of circumstances. By doing so, collage may establish an environment that not only supports academic success but also assures students are appropriately prepared for the difficulties of the modern world. In summary, the transformative influence of

problem-based learning and technological integration on writing achievement in higher education presents a compelling case for incorporating innovative approaches into modern teaching practices.

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