



## Is TPACK-Based Academic Writing Guidebook Effective to Improve Linguistic Competence of Preservice Elementary School Teachers?

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### Abstract

Students often experience problems in linguistic aspects which affect the quality of their writing. The use of academic writing guidebooks is needed to overcome these problems. To meet the needs of students as technology users, the academic writing guidebook is presented based on the Technological Pedagogical and Content Knowledge (TPACK) approach. The aim of this research is to determine the differences in learning outcomes before and after using the guidebook presented and to determine the effectiveness of this guidebook. This research uses a quasi-experimental method with the data analysis process using the Wilcoxon and Mann-Whitney U tests. The results of this research show that there is a significant difference between the pre-test and post-test of the experimental group. However, there was no significant difference between the experimental group and the control group. Which mean academic writing guidebook is ineffective to improve languages aspect in student academic writing skill.

**Keywords:** *TPACK, academic writing, guidebook, linguistic competence.*

### Abstrak

Mahasiswa seringkali mengalami permasalahan pada aspek kebahasaan yang mempengaruhi kualitas tulisannya. Penggunaan buku panduan penulisan akademik diperlukan untuk mengatasi permasalahan tersebut. Untuk memenuhi kebutuhan mahasiswa sebagai pengguna teknologi, maka buku panduan penulisan akademik

disajikan berdasarkan pendekatan TPACK. Tujuan penelitian ini adalah untuk mengetahui perbedaan hasil belajar sebelum dan sesudah menggunakan buku panduan yang disajikan dan mengetahui keefektifan buku panduan tersebut. Penelitian ini merupakan penelitian kuasi eksperimen dengan proses analisis data menggunakan uji Wilcoxon dan Mann-Whitney U. Hasil penelitian menunjukkan terdapat perbedaan yang signifikan antara pre-test dan post-test kelompok eksperimen. Namun tidak terdapat perbedaan yang signifikan antara kelompok eksperimen dan kelompok kontrol. Artinya, buku panduan penulisan akademik tidak efektif untuk meningkatkan kemampuan kebahasaan pada keterampilan menulis akademik mahasiswa.

**Kata kunci:** *TPACK, penulisan akademik, buku panduan, kompetensi linguistik.*

## **INTRODUCTION**

Academic writing is competency that must be mastered by students at the tertiary level. Students are required to actively develop their academic writing, therefore, students need to develop academic writing skills that are specific and appropriate to the field of science they are studying (Montaner-Villalba, 2021). Academic writing related to how they able to convey thoughts and ideas in writing in accordance with scientific writing standards and paying attention to linguistic aspects. According to Kongsat (2020), academic writing is non-fiction writing prepared as part of academic work or as a result of scientific reports. Kruse (2013) states that academic writing ability is associated with a person's ability to convey knowledge through various processes such as developing, collect, search, test, systematize, analyze, criticize, reflect, apply or transforming knowledge.

Good academic writing skills are very important for students. Academic writing is linked to practical activities of an institutional nature, because it is part of the curricular structure universities and general competencies that students must achieve (Barreda-Parra et al., 2023). This competence is closely related to the basic skills students needed to successfully face learning tasks at university and their subsequent professional needs. things that need to be considered in academic writing for the success of producing quality writing at university, firstly, understanding the genre of writing created by students because their writing is assessed based on the relevance of the writing genre and the choice of vocabulary or grammar that meets academic writing standards (Therova, 2023). Another statement from Dagarin Fojkar & Berčnik (2023), states that academic writing skills provide the knowledge needed to express oneself effectively, analyze texts, think critically, quote correctly, and avoid plagiarism. Academic writing ability is also a basic competency needed in writing research results. Suleimanova & Lykova (2023) added that academic writing competency can be a determining factor in evaluating student performance, which in the long term may influence their academic prospects and professional careers.

Good academic writing is influenced by many aspects. According to Benzie & Harper, (2020), the components of academic writing cannot be separated from texts, cognitive processes, events and sociocultural circumstances. Good academic writing is grammatically accurate and in accordance with generally accepted rules, and is assumed to be widely understood. teaching academic writing involves intensive guidance so that students can reflect on their writing process and use metacognitive strategies (Teng et al., 2022). It skills enable students to know all the rules of their language and organize their ideas more consistently

with the language (Ginting & Barella, 2022). In this process students need to understand, plan, set goals for writing assignments and respond to and reflect on what has been written (Sasaki et al., 2018). Apart from that, academic writing activities also require students to learn how to use arguments, paraphrase writing and refer to relevant sources (Hyytinen et al., 2017). So, a student can be said to have good writing skills when they mastered both the knowledge aspects related to writing materials as well as the good linguistic aspects needed in academic writing.

In the 21st century, technological adaptation in various fields is inevitable. Today's is an era that combines the life processes of real space with virtual space in solving social problems (Ramadhani et al., 2021). Students live dependent on technology. Technology developed rapidly that it penetrates space and time (Hasanah et al., 2022). Information can not only be accessed within the scope of one region or one country but it can also be accessed by all people in any layer of the world. So learning in class will also be more effective if they adapt technology both in terms of strategy and material preparation. Academic writing in higher education is now characterized by what is called digital literacy, which is associated with the use of technology, navigation and use of virtual environments, as well as the interpretation and compilation of various types of texts which are now increasingly hybrid and multimodal (Crete & Lea, 2008).

Writing skill requires literacy skill (Wardiani et al., 2021), especially linguistic aspects. However, students faced various problems in academic writing, especially in linguistic aspects. The results of student writing assignments show that students often experience errors in writing punctuation such as comma placement, letter writing errors, word writing errors and word forms, ineffective sentences and incoherent sentence writing. This is also shown by Bram & Angelina (2022) in their study about academic writing in English language courses. The result shows that students faced difficulties, especially in linguistic aspects such as spelling, vocabulary, punctuation, cohesion, discourse markers, writing paragraphs with a clear focus, sentence coherence and paraphrasing in sentences. Meanwhile, Bolsunovskaya & Rymanova (2020) in their study of engineering students found that they experienced problems in academic writing related to organization, coherence and connectivity between sentences and paragraphs. Meanwhile, Fadda (2012) in his research results explained that students still often experience difficulties in connecting ideas between sentences, using appropriate grammar and choosing words or phrases that should not be used. The various problems that often arise in academic writing according to Lillis and Turner (2001) is confusion experienced by students about what is needed in academic writing, because there are countless academic writing conventions and various suggestions are simultaneously given to novice writers, namely students. Regarding, for example, how to write an introduction in a paragraph, compose a conclusion, how to write using your own language etc.

Students faced difficulties especially in the linguistic aspect and need to be resolved by providing comprehensive guidelines. Students need to understand the signs of good linguistic writing, especially the appropriate grammar used in academic writing. Hirano (2014) states that these challenges can be solved by students with the use of relevant learning resources. As adult learners, students can study independently, so the guidelines do not need to be tutorials in class, but rather take the form of a guidebook that they can use independently. A good guidebook must follow technological developments, so the form of the guidebook should not

only present writing but also supporting information such as explanations in the form of digital slides, videos etc.

Besides that, making academic writing guidebooks must be adapted to student needs, especially the learning approach used. The involvement of technology in learning, as well as attention to types of knowledge and pedagogical aspects are inseparable from learning activities in higher education. Integrating technology in learning to write has become an important part of developing student writing skills (Abubakir & Alshaboul, 2023). This learning approach can be associated with the TPACK (Technological pedagogical and content knowledge) approach. TPACK profile is associated with the use of technology in learning planning (Schmid et al., 2021). TPACK is a theory developed to explain a set of knowledge needed for learning, to be carried out effectively, and by involving technology (Santos & Castro, 2021). The essence of TPACK lies in lecturers' creativity and flexibility in creating lessons and experimenting with technology to meet students' learning needs (Chai et al., 2013).

Previous research was conducted by Ngui et al. (2019) which developed an e-portfolio to assess, instruct and provide feedback for students to develop academic writing skills. Another study on guidelines in academic writing was conducted by Selvakumar et al. (2022) explaining the guidelines for compiling citations and references. The conclusion of this study shows that a good understanding of how to cite and list references in academic writing activities helps in time management efficiency. Acquiring reference skills can be a good start to compiling academic writing. The difference with this research is focuses on designing concepts theoretically and combined with practical steps that make it easier for students to develop academic writing skills, especially in terms of language competence. For this reason, preparing a TPACK-based academic writing guidebook is an effort to develop students' writing skills, especially to help students understand linguistic aspects. This study aims to determine whether there are differences in students' academic writing abilities in the language competency aspect before and after using the TPACK-based academic writing guidebook, and whether the use of the TPACK-based academic writing guidebook is effective in improving students' linguistic competence in academic writing.

## **METHODS**

This research uses a quasi-experimental method. The experiment was carried out to find out whether there was a significant difference in students' understanding of linguistic aspects in academic writing in the experimental class before and after using the TPACK-based academic writing guidebook. Secondly, to find out whether there was a significant difference between the experimental class and the control class regarding students' understanding of linguistic aspects in academic writing.

This research was conducted with the following steps. *First*, determine the sample. Purposive sampling technique used to define samples, samples are taken based on previously determined objectives. The selected class is students from the class of 2022/2023 with the assumption that they are studying academic writing intensively. The number of students in the experimental class was 45 students and the number of students in the control class was 45 students. *Second*, determine the location of the research. This research was conducted at the elementary school teacher education department of Nusantara University PGRI Kediri in the

language studies class in the odd semester 2023/2024. *Third*, developing research instruments instrument build in the form of questions with open answers to determine students' understanding regarding linguistic aspects in academic writing. The grid questions include, writing punctuation (periods, commas, quotation marks), writing letters (capitals, italics and prepositions, word form, selection of standard vocabulary, effective sentences, and paragraph preparation. *Fourth*, check the validity of instrument. The validity of the instrument was tested using the product moment correlation test and the reliability of the instrument was tested using the Cronbach alpha test.

To find out whether there are differences in students' understanding regarding linguistic aspects in academic writing before and after using the TPACK-based academic writing guidebook, a prerequisite test was carried out, it was normality and homogeneity test. The results of the normality test can be seen in the table below

Table 1. Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
posttest	.146	44	.020	.944	44	.034
pretest	.169	44	.003	.952	44	.068

a. Lilliefors Significance Correction

The table 1 shows that the significance level of the pre-test data is  $0.03 < 0.05$ , while the post-test is  $0.020 > 0.05$ . Data is said to be normally distributed if both data tested show a significance level above 0.05, so it can be stated that the data in this study is not normally distributed.

The next prerequisite test is the homogeneity test to see the homogeneity of data between the experimental class and the control class, the results can be seen in the table below

Table 2. Test of Homogeneity of Variance

		Levene	df1	df2	Sig.
		Statistic			
Tess result	Based on Mean	.153	3	172	.928
	Based on Median	.207	3	172	.892
	Based on Median and with adjusted df	.207	3	150.507	.892
	Based on trimmed mean	.147	3	172	.932

The results of the homogeneity test using Leven statistics show scores of 0.153, 0.207, 0.207,  $0.147 > 0.05$ , so it can be stated that the data is homogeneous. From the results of the two prerequisite tests, it shows that the data is homogeneous but not normally distributed, so the difference test between the pre-test and post-test was carried out using the Wilcoxon test, while the difference test between the experimental group and the control group used the Mann-Whitney U test.

## RESULTS AND DISCUSSION

The first results of this study explain the differences in pre-test and post-test results, as well as differences in test results between the experimental group and the control group. In the experimental group, students took a pre-test and were then given a TPACK-based academic writing guidebook in e-book form. Students analyze parts of the article by paying attention to the instructions in the book. Next, the researcher gave a post test. Meanwhile, in the control group, students listened to an explanation regarding the guide to analyzing parts of the article based on the explanation that had been given. Then students do a post test.

The descriptive statistical test results data and normal gain score related to the average linguistic ability of prospective elementary school teachers as in the table below

Table 3. Descriptive Statistics

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
pre test experiment group	44	25.00	92.00	56.3400	13.61200
post test experiment group	44	40.00	84.00	64.4091	12.45330
pretest control group	44	32.00	76.00	52.8182	11.81499
post test control group	44	40.00	80.00	60.6364	11.01181
Valid N (listwise)	44				

Table 4. Descriptive Statistics N-Gain score

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
N-gain score	86	-5.50	.59	.0727	.74109
Valid N (listwise)	86				

The results of the normal gain score test show a mean value of 0.07, so it can be concluded that the research data has a low normal gain score (Meltzer, & David, E. 2002). Furthermore, analysis of the pre-test and post-test of students in the experimental group shows the results as in the table below.

Table 5. Ranks

		<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
post – pre	Negative Ranks	9 <sup>a</sup>	17.72	159.50
	Positive Ranks	32 <sup>b</sup>	21.92	701.50
	Ties	3 <sup>c</sup>		
	Total	44		
a. post < pre				
b. post > pre				
c. post = pre				

In the Negative rank section, 44 respondents experienced a decrease in post test results compared to the pre test results of 9 respondents. Meanwhile, the Positive rank section shows that 44 respondents experienced an increase from pre-test to post-test by 32 respondents. So the number of respondents who experienced an increase was more than those who

experienced a decrease. Next, to find out whether there is a significant difference between the pre test or post test, the Wilcoxon test was carried out with the following results.

Table 6. Test Statistics<sup>a</sup>

	<b>post - pre</b>
Z	-3.522 <sup>b</sup>
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Wilcoxon test results show that the z value is  $000 < 0.05$ , so it can be said that there is a significant difference between the pre-test and post-test results. This means that the use of academic writing guidebooks can improve linguistic competence in the control group. Next, testing was carried out by comparing the post test results between the control group and the experimental group which showed the following results

Table 7. Test Statistics<sup>a</sup>

	<b>result</b>
Mann-Whitney U	796.000
Wilcoxon W	1786.000
Z	-1.444
Asymp. Sig. (2-tailed)	.149

a. Grouping Variable: kelas

Based on the statistical output, the significance value is  $0.149 > 0.05$ , so there is no significant difference learning outcomes in understanding of linguistic aspects between the experimental group and the control group. So it can be said that using a TPACK-based academic writing guidebook cannot be said to be more effective than without using an academic writing guidebook.

The use of academic writing guidebooks in lecture activities, especially those related to writing scientific articles, is something that is commonly done. As technology develops, students can access learning resources that are much more varied and not focused on just one source. Using a search engine to do assignments or answer a problem in class is considered more efficient for students, so many students have abandoned using books as their learning resource.

Students in the experimental class only used a guidebook to analyze articles and linguistic aspects in a text, then the test results between the pre-test and post-test showed significant differences. Meanwhile, in the control group, they did not use academic writing guidebooks, but they were allowed to utilize various learning sources including using search engines such as Google and Yahoo. So, they also get various information according to their needs. This shows that basically students no longer depend on just one learning source. This means that learning effectiveness is not necessarily related to the provision of learning resources, such as the use of academic writing guidebooks. Research conducted by Muico et al. (2022) shows that the use of online resources among students is very high. In addition, the

high use of online resources shows that students' academic writing is also high. From this research it can be observed that there is a significant relationship between the utilization of online resources and academic writing. As stated in research by Sackstein et al. (2015) which tested reading comprehension skills related to books using two different digital media, showing that there was no significant difference. This means that the form of media used to package books does not make a significant difference to reading comprehension abilities, on the other hand, the use of open educational resources can improve student learning outcomes, such as the results of research conducted by Venegas-Muggli & Westermann (2019) which shows that the use of open academic resources in first year students majoring in mathematics shows higher learning outcomes compared to students who only use textbooks or traditional sources. This means that sources that vary in various forms of packaging will be more interesting and efficient for students to use than just in book form.

Apart from that, the development of academic writing skills, especially in linguistic aspects, cannot only be based on the learning resources used by students, but also other aspects such as learning strategies used in learning activities (Aunurrahman et al., 2017). Based on the results of this research recommends that learning activities, especially lecturers, need to combine explicit learning strategies with more cooperative learning activities. Meanwhile, Schillings et al. (2021) recommend holding peer feedback between students to read each other's written results and elaborate on the results in the form of discussion activities.

Using academic writing guidebooks is an effort to help students improve their academic writing skills, especially with regard to linguistic aspects. However, what can determine a student's success in developing academic writing skills does not depend on using guidebooks alone. Academic writing is a skill that can be developed through repeated and continuous practice, so the more often students practice writing, the more students are able to apply linguistic aspects correctly. To improve their writing skills, students must have self-confidence so they are motivated to practice writing. This is in line with the results of research conducted by Chen, et al. (2023) that students who are confident in their writing skills will consider academic writing skills important in the field of they are studying.

The results of this study are not in line with previous research conducted by Rofingah et al., (2020) which stated that writing guidebooks can improve knowledge in writing. In addition, the results of other studies also show that packaging material in digital form can improve language competence, especially in the listening and speaking (Sabir et al., 2021). However, the results of this study show that packaging materials in digital form has not proven to be effective in improving students' language competence.

From this research, we recommend that for further research to develop a more web-based form of guide that is easily accessible to students, and is accompanied by information and examples that support students' needs in academic writing. It is hoped that digitalization will not only take the form of a printout form into an e-book form equipped with examples that can be accessed in other sources, but will be based on an interactive website and have more complete linguistic features.



## CONCLUSIONS

Understanding linguistic aspects in academic writing is important. Using academic writing guidebooks to help students understand linguistic aspects shows significant differences between before and after their use. However, the use of this guidebook cannot be said to be effective when compared with the control group who did not use the guidebook. The development of academic writing skills, especially in linguistic aspects, does not only depend on one learning source, but also the use of various learning resources, determining appropriate strategies and academic writing experience by the students themselves.

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