



TPACK-based HOTS in Teaching Writing for Promoting EFL Learning Quality on Higher Education: Applying “Program Merdeka Belajar – Kampus Merdeka and Kurikulum Paradikma Baru”

Bagus Waluyo⁽¹⁾, Umi Nahdiyah⁽²⁾, Cholida Indrian Fahriana⁽³⁾

Universitas Nahdlatul Ulama Blitar, Indonesia

E-mail: ⁽¹⁾wahuyobagus81@gmail.com, ⁽²⁾uminahdiyah@unublitar.ac.id,
⁽³⁾indrianaida@gmail.com

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Abstract

The purpose of the study is to describe the technology on TPACK-based HOTS applied by lecturers of a suburban university in teaching writing, and its challenge faced in-class interaction. Four English lecturers from Universitas Nahdlatul Ulama Blitar in Indonesia are the participants selected using the purposive sampling design. The process of data collection uses depth interviewing through the online system. Data are analyzed using a "holistic" viewpoint in case study. The results revealed that simple technology dominates the general interactions when teaching writing. Some lecturers may only have a basic understanding of utilizing technology to teach writing. Even they still favour using manual teaching. Because the internet network is poor, few students have technology equipment like laptops, and the interaction is tedious because students are unfamiliar with the technology. It is better that the government, schools, the community, and the primary critical holders for learning must work together in determining policies in the face of changes to use technology in all aspects of school interaction.

Keywords: Case study on "holistic" viewpoint, EFL Lecturers' Quality, TPACK-based HOTS, Teaching Writing

Introduction

The need to survive the fast-changing development of technology is driving communities to acquire new skills and Knowledge. Integrating Technological Pedagogical Content Knowledge (TPACK)-based High Order Thinking Skills (HOTS) into the classroom has been carefully considered to create more suitable class environments for improved teaching and learning of writing. Teachers' ability to incorporate technology-based HOTS into their writing instruction can serve as a bridge to help students improve their quality. Due to the Covid-19 outbreak, most countries have gone into the learn-from-home phase. The adoption of TPACK based HOTS framework allows for the separation of required Knowledge for the teaching-learning process in the digital age (Chai et al., 2017). Covid 19 outbreaks in several nations prompted policy improvements in education, including learning at home to prevent the disease's spread. To secure the learning process,

educational instructors must be responsive to changes from offline to online interaction (Faizah et al., 2021). The use of instructional technology in teaching and learning has become necessary for all instructors and educators, particularly in 21st-century education. Furthermore, the current global emergent condition of the COVID-19 pandemic has compelled educators to use various online platforms and technologies to conduct emergency remote teaching and learning and home-based learning (Sahrir et al., 2021). In order to ensure the effective conduct of remote teaching and learning in post-pandemic, educators must master TPACK-based HOTS knowledge and skill to teach writing in higher institutions in suburban.

A study by Rebeca et al. (2021) discovered that the advancement of technology has resulted in the rise of new teaching approaches, one of which is Technological Pedagogical Content Knowledge (TPACK), which combines technology, pedagogy, and theoretical content in an at-

tempt to encourage the integration of technology and Knowledge. Wen-lan Shang (2022) also conducted a similar study on College English classroom teaching in China. The study resulted that By utilizing the machine learning-based Internet of Things, the lower section of the experimental class's learners' writing performance is superior to that of the middle and high sections. Among these, there has been a considerable improvement in grammar, quantity, expression, and structure, which has enhanced students' pre-class preview effectiveness, desire for independent study, the standard of their homework completion, and post-class reflection behavior (Shang, 2022). In a study by Hysaj and Hamam, Students preferred to continue learning online during the pandemic, which provided insight into how they perceived using the online platform. Both teachers and students will have the chance to operate differently inside the TPACK framework due to the switch to the online platform. This framework should facilitate online writing courses, enhance their delivery, and increase students' interest in and enthusiasm for the courses. It is clear from reading the earlier literature that there is not considered research on the use of the TPACK framework in academic writing. Consequently, in this area of the literature, we analyze a few recent research (Hamam, 2020). Tai, Pan and Lee wanted to use the TPACK model to develop an online English writing course for nursing students to observe how the course would affect students' performance. The study also sought to gauge how satisfied the students were with the instruction (Tai et al., 2015).

Again, the TPACK framework improved students' English writing abilities and led to effective teaching and learning; hence it was advised to keep using the 54 D. This suggests that the TPACK architecture offers a strong foundation for leveraging technology to teach EAP writing courses (Farikah & Firdaus, 2020). Furthermore, Schmidt stated that Language teachers must combine their expertise in technology and language instruction to deliver effective technology-based learning. He added that many teachers struggle to accomplish it (Am made et al., 2020). Moreover, Schmidt centered on a case study that describes the TPACK framework among three language teachers' understanding using a digitally created reflective portfolio. Data were gathered via observations made in the classroom, online questionnaires, inter-

views, and reading materials. The study's results demonstrated that the TPACK framework substantially impacted how teachers used various technology tools when instructing composition classes. However, educational assumptions about how technology affects teaching, learning, and student involvement limited the implementation of the framework. The study's findings are crucial because they will help language instructors in a world where technology is becoming more and more pervasive. The TPACK system as a whole and the online platform for teaching language skills show promise for use in the future (Schmidt et al., 2014).

Another finding by Nicole for Three in-service university SLW teachers (2019) resulted that Knowledge of instructional material was essential to how lecturers employed technology. Professional perspectives on the value of visual literacy and contextual factors, including institutional support and communities of practice, improved the instructors' TPACK. However, it was restricted by low levels of self-efficacy and pedagogical misconceptions about how technology affects student learning and engagement (Schmidt et al., 2009). Constructivist learning environment supplemented by technology in terms of problem awareness, information literacy, reasoning, and research designing, CLE has improved the students' problem-based learning (PBL) procedures and research capacity development. The CLE enhanced the overall learning process by providing ongoing instructional support, forum discussions, and information resources and tools. However, faculty tended to shy away from offering such a course because it is not only tricky but also goes against the institutional ethos, professional ideals, and pedagogical tenets of Chinese higher education. The report finishes by evaluating the overall successes and shortcomings of the reform initiatives, as well as its ramifications for future technological integration in foreign language teaching and learning in China (Gu et al., 2020). To bridge the knowledge gap in early learning improvements that require technology in writing instruction, this paper examines how English instructors for higher education at a suburban university are changing how they teach writing using technology. The study's research questions are 1) how do lecturers apply TPACK-based HOTS in teaching writing to promote EFL students' quality? Moreover, 2) what are the challenges to teaching writing by applying TPACK-based HOTS in suburban students?

TPACK-based HOTS in teaching writing

The TPACK framework offers a theoretical underpinning to effectively describe the interdisciplinary knowledge a teacher needs to deploy technology (Schmidt et al., 2009). It is represented by interactions between its fundamental constructs and is located in practice, modified by circumstance (content, pedagogy, and technology). The target language and its culture are part of the teacher's content knowledge (CK) for L2 instruction. "pedagogical knowledge" (PK) refers to a general understanding of teaching strategies. A teacher's technological knowledge (TK) comprises their comprehension of using digital tools effectively in both professional and private settings. Technological content knowledge (TCK) in language teaching uses technology to express languages and cultural knowledge. The change of subject-specific representations "to make the content more understandable to students" is known as pedagogical content knowledge (PCK) (Graham et al., 2012, p. 532). Knowing how to modify technology to fit a pedagogical approach is referred to as technological pedagogical knowledge (TPK). TPACK is defined as the "thoughtful interweaving of all three primary sources of information" when taken as a whole (Graham et al., 2012). The constructions across seven knowledge categories are displayed in Figure 1.

The development of TPACK focuses on four key areas: curriculum and assessment (using technology to organize and assess student learning); learning (using technology to present course material and direct student use of technology); teaching (delivering technology-focused content, designing courses with technology in mind, engaging faculty in profession-

al development, and creating a technology-friendly learning environment); and access (making technology easy for all students, including learners with diverse needs) (Niess, 2011). There are many benefits to using technology in learning. Students increase attention, concentration, motivation, and independence. Furthermore, for teachers to reduce the use of time to deliver material, make the student learning experience more enjoyable, design material more interesting, and encourage teachers to improve their knowledge and skills regarding computers (Nasution, 2018).

Higher-order thinking skills, also known as Higher Order Thinking Skills (HOTS), are demands of the 2013 Curriculum. Higher-order thinking skills in learning are applications of thinking processes for complex situations and have many variables (Shidiq et al., 2015). HOTS is not just a question model but also includes a teaching model. The teaching model must include the ability to think, examples, apply thinking, and adapt to the needs of different students (Sofyan, 2019). HOTS, or higher-order thinking skills, are deep thinking processes about processing information in dealing with and solving complex problems and involving skills in analyzing, evaluating and creating (Rohim, 2019a). This ability examines a problem and can use its knowledge in new situations (Dinni, 2018). Higher-order thinking skills, or so-called Higher Order Thinking Skills, are thinking skills that are not just remembering, restating and referring without processing, but the ability to think to examine information critically and creatively, be creative and solve problems (Ahmad & Sukiman, 2019). Higher Order Thinking Skills (HOTS) are the ability to parse or develop the material, make conclusions, build representations, and analyze and relate information obtained (Aryani et al., 2020).

The characteristics of HOTS are: measuring high-level thinking skills based on contextual problems, not routine (not familiar), and using various forms of questions (Fanani, 2018). Characteristics of higher-order thinking skills include critical thinking and creative thinking. The ability to think is an essential ability that can encourage a person to see a problem from various points of view and look for different alternative solutions to produce new products that benefit their survival (Rohim, 2019b). HOT skills facilitate students' aptitude and interest in writing in ESL lessons (Singh et al., 2018). HOT writing activities should be given in all classes to help students de-

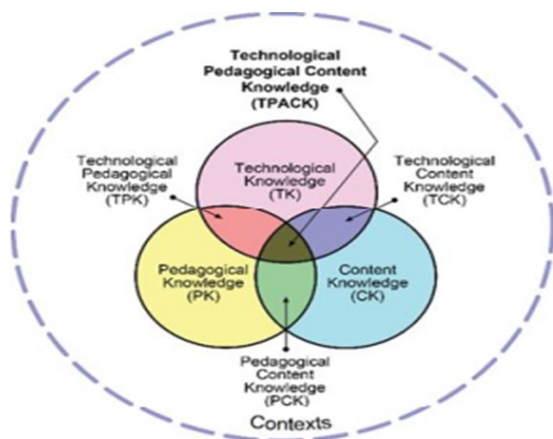


Figure 1. TPACK Framework (Koehler et al., 2007)

velop writing skills and interests (De Mello et al., 2021). Computational and cognitive approaches are used in learning a language in writing to help learners strengthen higher-order thinking skills (Shafie & Ahmad, 2010).

EFL Lecturers' Quality in writing

Writing is the repetitive act of producing written material. It demands extensive knowledge as well as the capacity to write understandable content. Writing expertise is a valuable source for the writing process and final output. Writers use various types of information retained in long-term memory when writing (Gillespie et al., 2013). If the information is available to authors and used imaginatively, it can improve the fluidity and quality of their work. However, understanding how writing in a first language (L1) differs from writing in a second language (L2) or a foreign language (FL) can interfere with students' L2/FL compositions. Because of the issue or topic at hand and the language required to articulate their ideas, L2/FL authors typically find it challenging to write (Asraf et al., 2018).

Writing instruction needs to cover all aspects of writing, not just composition and revision, when teaching writing in a second language or foreign language. Different levels of knowledge acquisition reflect various events and writing quality. Four categories of writing knowledge that ESL/EFL students need to be familiar with: process, system, content, genre, and context knowledge. Process knowledge, or meta-cognition, is crucial for triggering students' meta-cognition, which becomes the main focus of writing assignments. It is also a crucial element of self-regulatory writing (Shen et al., 2002). Students' understanding of process writing enables them to plan and finish a writing assignment. The students' metacognitive knowledge aids in thinking about the topic and text type, the planning and writing process, and the approaches are taken to finish the assignment while writing. The lack of metacognitive understanding may have influenced the poor L2 writing score.

Additionally discovered as a predictor of L2 students' writing scores was knowledge of the substantive writing process, which is varied by text (Gillespie et al., 2013). The students' mean English writing score on the posttest was higher than on the pretest after they collaborated on weblogs, and they had favourable opinions toward utilizing weblogs for learning. Most stu-

dents who participated in cooperative learning activities utilizing weblogs believed collaborating with peers on blogs was fun and novel (Kitchakarn, 2014). Technologies are giving teachers and students new ways to get beyond the limits of traditional methods in language teaching and learning due to the rapid growth and expansion of technology in recent years. Technologies have outstanding advantages, like cheap cost, accessibility, engagement, and ease of use, making teaching and learning more appealing than ever. Since it has been recognized how important writing ability is, numerous innovative strategies are being used in the classroom. Weblogs can support learners in improving their writing skills, inspire them to write well, and maintain conditions where students can continue learning to write outside the four walls of the classroom. Using websites to teach language skills is a unique and new method for university lecturers (Kitchakarn, 2014).

Material and Methods

We decided to perform a case study to answer the questions we had in consideration since it is the most suitable method for this study because it addresses the "how" and "why" components of the problem. It assisted us in figuring out "how" lecturers use TPACK-based HOTS in instructing writing to improve the quality of EFL learners and "what" the challenges are faced. The case study methodology is additionally "holistic," "empirical," "interpretive," and "emphatic." (Robert K. Yin, 2018). Because our study is case-oriented and substantially non-comparative and seeks to comprehend its object more than to understand how it differs from others, it took a "holistic" viewpoint on research (Stake, 1995). We used a variety of data sources to support our research and enable triangulation, including classroom observations and interviews, all of which are intended to increase the accuracy or reliability of the results (Denzin, Norman, 2018). Using the purposive sampling design, we selected four English lecturers from Universitas Nahdlatul Ulama Blitar in Indonesia as the participants. The primary factor in choosing the participants was their experience teaching writing using technology.

In the first few weeks of the semester, lecturers had been teaching writing. The criteria for evaluating higher-order thinking skills guided their choice of resources. These guidelines ask teachers to a) be clear about what they want to

assess; b) design activities so that students must use their knowledge and skills; c) decide which evidence will be used to gauge the extent of students' knowledge and skills; and d) give students something to think about, such as a text, scenarios, visuals, resource materials, or problems. Use fresh content that has not been covered previously, and categorize the complexity into easy, challenging, lower order, and higher order (Susan M. Brookhart, 2010). The process of data collection uses the depth interviewing through the online system as follows: 1) the writer sends interview sheets to the four lecturers who are the subject of research through the online system, the WhatsApp application; 2) within two weeks of the 23-29 September 2022, the participants have the opportunity to answer interview sheets designed according to research needs, and 3) the results of the interview sheet are sent to the authors. Then, Interviews inevitably have a sense of formality. The researcher asked the respondent if he would give some time and reveal some of his thoughts, not in an idle chat but in a situation where the researcher would record it or write it down (Bassey, 1999). The method of taking the data will produce outcomes under the research objectives.

In analyzing the results of interviews, they start from 1) summarizing all the answers from the subjects related to the research question; and 2) sorting out summary results focused on the research problem. Then, they do several things to formulate the final results obtained, namely: 1) Organize and prepare the data for analysis; 2) Read or look at all the data; 3) Start coding all of the data; 4) Generate a description and themes; 5) Representing the description and themes as the finding of this research (Creswell & Creswell, 2018). Case study analysis is richly descriptive as it is focused on comprehensive and varied sources of knowledge. It uses quotes from key players, stories, interview processes, and other literary strategies to construct visual images that bring to life the nature of the many variables involved in the phenomenon being studied (Dawson, 2006). From the first stage of doing research to the last stage, which is the interpretation of the findings, they take the following steps: 1) choose the participants and the venue for the theme-specific study; (2) coordinate with the teachers as a first step in introducing the research; (3) data collection through interview sheets sent via WhatsApp group; (4) processing the interview data through stages appropriate to the case study approach; and (5) interpreting complete data processing as the study's concluding finding.

Results and Discussion

Four lecturers conducted interviews following their first semester of technology-assisted writing teaching of TPACK-based HOTS. Details about the lecturers' academic qualifications, specialized teaching experience, and writing abilities can be seen in the table 1.

Profiles of the teachers who participated in this study are listed in table 1. 100% of participants have master's degrees. 50% of participants have less than two years of specialized teaching experience. They are classified as less mastering the use of technology in teaching. On the other hand, 25% of each participant is categorized as a master and proficient in classroom teaching using technology. In terms of writing abilities, 75% of participants have writing skills at the intermediate level. Another 25% are categorized in the advanced stage. From the detailed data about the lecturers, it can be concluded that all participants deserve to be objects in this study to answer the existing problems.

Table 2 contains the answers from the lecturers who participated in the interview when asked how technology influences higher education English lecturers at a suburban institution teach writing. For example, applying more easy technology in TPACK-based HOTS to teach writing such as PPT, Google form, zoom, YouTube, etc., 75% of lecturers agreed, and 25% strongly agreed. For practicing updated technological applications to teach writing, such as Google cendikia, Google Translate, Grammarly, Quilt, elicit, Mendeley, etc., 50% disagree, 25% strongly disagree, and 25% agree. Then, for the category, applying technology and using simple and advanced TPACK-based HOTS applications, class interaction and internet network are very smooth, students are more enthusiastic, and class interaction is more fun and lively, even student grades increase; 75% of lecturers disagree, and 25% agree. Moreover, The internet network is not good; only a small number of students have technology equipment such as laptops, and the interaction is not interesting because students feel less familiar with the technology used, mastering technology only a little in teaching, 75% of lecturers agree, and 25% undecided.

Table 1. Details about the lecturers

Academic qualifications	Bachelor -	Master 4 100%	Doctor -
Technological teaching experience	< 2 years 2 50%	3-4 years 1 25%	5-10 years 1 25%
Writing abilities	Basic -	Intermediate 3 75%	Advanced 1 25%

Table 2. Interview sheet on Linkert Scale

	Please note if you agree, strongly agree, undecided, disagree, or strongly disagree with each item with the appropriate response. Points A and B are for RQ 1. C and D are for RQ 2	
1	Strongly disagree	A. I apply more easy technology in TPACK-based HOTS to teach writing such as PPT, Google form, zoom, YouTube, etc. (____)
2	Disagree	B. I practice updating technological applications to teach writing, such as Google cendikia, Google translation, Grammarly, quilbot, Elicit, Mendeley, etc. (____)
3	Undecided	C. When I apply technology and use simple and advanced TPACK-based HOTS applications, class interaction and internet network are very smooth, students are more enthusiastic, and class interaction is more fun and lively, even student grades increase (____)
4	Agree	D. The internet network is not good, and only a small number of students have technology equipment such as laptops, and the interaction is not interesting because students feel less familiar with the technology used; I also mastered technology only a little in teaching (____)
5	Strongly agree	

Table 2. Interview sheet on Linkert Scale

No	Lectures (L)	Response for Likert Scales
1	L1	A = 4; B = 1; C = 2; D = 4
2	L2	A = 4; B = 2; C = 2; D = 4
3	L3	A = 5; B = 4; C = 4; D = 3
4	L4	A = 4; B = 2; C = 2; D = 4

Applying TPACK-based HOTS in teaching writing to promote EFL students' quality

In implementing the writing class, the use of elementary technologies such as PPT, Google forms, zoom, YouTube, etc., as learning aids that are integrated with TPACK-based HOTS is relatively necessary to improve writing skills and tech-

niques as proven in the writing class learning application, 75% of lecturers agree, and 25% strongly agree. In contrast, in selecting top-level applications in writing, such as the use of Google scholar, Google translate, Grammarly, quilt, Elicit, Mendeley, and others, 50% disagree, 25% strongly disagree, and 25% agree. Only 25% of lecturers strongly agree to use high-level applications because they feel technology is very helpful in developing students' knowledge in finding the latest sources from around the world without limits. It can be said that simple technology in teaching writing dominates the overall interaction pattern compared to the use of high-level applications; some teachers may have only a little knowledge related to understanding the use of technology in teaching writing. Even some lecturers still choose to use manual teaching.

Similar other findings reveal that Technology has the potential to help students become more motivated and creative during the teaching-learning process (Yulia & Amirudin, 2021). Technology can be used in language classrooms to encourage learners to interact (Rogers, 2008). The student's results may be impacted by teachers' use of technology-based writing treatments (Evmenova et al., 2020). When used in connection with learning, multimedia websites can encourage students to participate more actively (Syarofi et al., 2018). The validation of such tools is now crucial as online teaching and learning technologies transition from an instructional asset to a necessity (Limpo et al., 2020). Students' creative writing abilities can be enhanced and supported using various online and electronic resources (Manalastas, 2020). In corporate English programs, the issue of writing abilities is addressed using technology (Kutlu, 2013). a professional writing toolset helps students compose papers and flags grammatical and spelling mistakes (Lau et al., 2014). Technology has helped facilitate the prewriting, drafting, revising, proofreading, and publication of written works (Evmenova & Regan, 2019). The various styles of instruction, feedback, and collaborative exercises required for a successful writing class can all be integrated with Writeabout.com (Panmei, 2021). Writing instructors can intervene successfully at many phases of the writing process with minimum technological tools (Coleman, 1992).

The challenges to teaching writing by applying TPACK-based HOTS in suburban students

Technology support, of course, integrated learning outcomes are hindered due to several challenging factors. Lectures do not apply technology and use simple and advanced TPACK-based HOTS applications. It can be seen on the interview transcriptions that 75% of lecturers disagree to use technology, and 25% agree, because the internet network is not good, only a small number of students have technology equipment such as laptops, the interaction is not interesting because students feel less familiar with the technology used, lectures also master technology only a little in teaching. Moreover, the support for the campus environment is inadequate due to the lack of technology service facilities and teaching resources that need to be improved regarding the use of writing teaching applications integrated with technology. Furthermore, most students come from low-income families, so they cannot meet completeness needs.

Similar research findings revealed that preserving the interactive classroom structure is the fundamental problem in teaching writing online (Rakedzon, 2021). Pedagogy with technology in higher education is influenced by a wide range of individual, social, and economic factors (Ingleby et al., 2019). Numerous difficulties linked to incorporating technology into the curriculum are frequently not addressed by current methods of in-service and preservice teacher education (Hartshorne et al., 2005). Somewhere at a school close to you, a teacher is having trouble responding to a question from a student whose laptop battery is dead or another who is distracted by a funny cat video on the phone. Perhaps the wireless internet connection is intermittent, or the whiteboard's electronic components are acting up (Chuaytukpuan et al., 2022). Faculty resistance and unfamiliarity are the main obstacles to using technology in the classroom (Belt & Lowenthal, 2020). Specific preset reactions or interpretations of why the technology should be used lead to the failure of classroom technology (Baker & Baker, 2004). Teachers struggle to use technology in the classroom and may lack basic technological skills (Hedberg, 2011). The lack of training in learning activities, poor equipment access, inability to troubleshoot minor technology issues, and restricted usage of technology by teachers are all contributing factors (Davidson et al., 2014). Pedagogy with technology in higher education is influenced by a wide range of individual, cultural, and economic factors (Ingleby et al., 2019). In order for

instructors to undergo a meaningful paradigm shift and finally combine methodological and educational techniques, it is critically necessary for them to complete a training program to acquire the highest levels of digital competence. Because instructors' low self-perceptions of their digital proficiency continue to be a severe issue (Sánchez-Cruzado et al., 2021).

Conclusion

This study has given a detailed description of the technology on TPACK-based HOTS applied by lecturers of the suburban university in teaching writing and its challenge faced in-class interaction. The results of this study show that using elementary technologies such as PPT, Google forms, zoom, YouTube, etc., as learning aids integrated with TPACK-based HOTS is relatively necessary to improve writing skills and techniques, as proven in the writing class learning application. While compared to the usage of high-level apps, it can be claimed that simple technology dominates the general interactions when teaching writing. However, some teachers may only have a basic understanding of how to utilize technology to teach writing. Even some lecturers still favor manual teaching. On the other hand, only 25% of lecturers strongly agree to use high-level applications because they feel technology is very helpful in developing students' knowledge in finding the latest sources from around the world without limits.

Furthermore, lectures do not use technology and rely on basic and sophisticated TPACK-based HOTS applications because the internet network is poor, few students have technology equipment like laptops, and the interaction is tedious because students are unfamiliar with the technology. Lectures also have a limited understanding of technology in terms of teaching. Moreover, again, Due to a shortage of technology service facilities and teaching resources that need to be upgraded for the use of writing instructional applications that are integrated with technology, the support for the campus environment is insufficient. Again, because most pupils originate from low-income homes, they cannot satisfy the requirements of completeness-technology assistance. Of course, several complex issues inhibit integrated learning results.

According to the findings of this study, it is essential to balance the use of technology with manual teaching to further increase student learning motivation in suburban areas due to these factors. The findings can also be used as an essential reference for further research in analyzing writing teaching using technology. So that gaps in research findings can be measured and valuable for the sustainability of technology-based learning in the current post-pandemic. The development of technology to improve the quality of writing learning must continue to be developed so that the level of learning quality can increase following current developments. Therefore, the government, schools and the community, as the primary critical holders for learning success, must work together in determining policies in the face of changes that occur and the use of technology in all aspects of school interaction.

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