



Online Quiz and Pre-Service Teachers' Writing Proficiency

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Abstract

Writing proficiency, particularly in grammar, coherence, and vocabulary, remains a key challenge for pre-service teachers, emphasizing the need for technology-supported learning. This quasi-experimental study examined the impact of online quizzes on the writing proficiency of the pre-service teachers. The participants' writing proficiency in grammar, coherence, and vocabulary was assessed before and after an online quiz intervention administered via Google Forms. Before the intervention, participants completed a written task evaluated using a rubric and answered seven sets of 20-item grammar quizzes uploaded online. The intervention involved answering online quizzes three times a week, and retaken up until a perfect score was achieved. After three months, participants completed another writing task evaluated using the same rubric. Data were analyzed using descriptive and inferential statistics, including the Wilcoxon and Kruskal-Wallis tests. Results showed significant improvement in overall writing proficiency, with grammar and coherence showing the highest gains, while vocabulary remained the weakest area, requiring further instructional support. Year-level comparisons revealed first-year students progressed from developing to proficient levels, particularly in grammar, while second-year students exhibited the greatest improvement in vocabulary. Common grammar errors, particularly in subject-verb agreement and verb usage, were significantly reduced after the intervention. The study concludes that online quizzes effectively enhanced grammar proficiency and reduced frequent grammatical errors but recommends additional strategies to improve coherence and vocabulary, especially among first-year students.

Keywords: Online quiz, Pre-service, Proficiency, Teachers, Writing

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1. Introduction

Developing language skills, particularly writing, has long been a central concern among language educators. Writing is a complex skill that requires mastery of grammar, vocabulary, organization, and critical thinking. Many students, however, struggle with structuring ideas logically, selecting precise words, and producing grammatically correct sentences, highlighting the need for effective instructional interventions. For the pre-service teachers, strong writing proficiency is especially essential, as it not only supports academic achievement but also enhances communication and critical thinking skills vital for their future professional roles. To address challenges in writing development, technology-

assisted learning has emerged as an important approach.

Among these tools, online quizzes and AI-powered platforms such as ChatGPT provide interactive and accessible means of reinforcing grammar, expanding vocabulary, and improving sentence construction. Their key advantage lies in the provision of instant feedback, which enables students to identify and correct errors in real time while engaging in continuous practice. Empirical studies have highlighted the effectiveness of online quizzes in supporting writing development. For instance, [1] found that online quizzes with guided feedback significantly improved student performance and satisfaction. Similarly, [2] reported that EFL learners expressed positive perceptions of quiz applications, emphasizing their role in enhancing motivation, grammar

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learning, and overall engagement. In the same vein, [3] observed that online quizzes increased student enthusiasm, making the learning process more enjoyable and effective. ChatGPT shows great potential as an effective tool for enhancing classroom engagement and supporting enriched language learning experiences [4], offering valuable support even as pre-service teachers experience difficulty in critical areas such as identifying relevant resources, structuring learning activities, and facilitating effective student engagement [5]. Mayer's Cognitive Theory of Multimedia Learning [6] supports these findings, highlighting that digital technologies enhance learning by actively engaging cognitive processes. Interactive, self-paced online quizzes improve writing skills by promoting active processing, reducing cognitive overload, and fostering meaningful learning experience [7]. Furthermore, Skill Acquisition Theory [8] explains how students develop skills through practice and feedback. Language learning is similar to the acquisition of other abilities, requiring repeated practice to improve, with skilled behaviors becoming routinized and even automatic under particular conditions. Together, these perspectives underscore the potential of systematic, technology-based interventions to enhance writing proficiency [9].

Building on these insights, this study investigates the effectiveness of online quizzes as an intervention for improving students' writing skills, with specific attention to

grammar accuracy, coherence, and vocabulary development. It aims to contribute to a deeper understanding of technology-based instructional practices in language education, particularly the role of online quizzes in enhancing writing proficiency.

1.1. Problem statement

The study examined the effectiveness of online quiz in improving the pre-service teachers' writing proficiency in the areas of grammar, coherence, and vocabulary. Specifically, it sought answers to the following questions:

1. What is the writing proficiency of pre-service teachers as an entire group and in terms of grammar, coherence, and vocabulary, before and after exposure to online quizzes?
2. What is the writing proficiency of pre-service teachers as to year level in terms of grammar, coherence, and vocabulary, before and after exposure to online quizzes?
3. What are the most common grammar errors made by pre-service teachers, and which specific aspects of grammar have improved after exposure to online quizzes?
4. Is there a significant difference in pre-service teachers' writing proficiency in terms of grammar, coherence, and vocabulary before and after exposure to online quizzes?
5. Is there a significant difference in pre-service teachers' writing proficiency as to year level, in terms of grammar, coherence, and vocabulary before and after exposure to online quizzes?

1.2 Framework of the Study

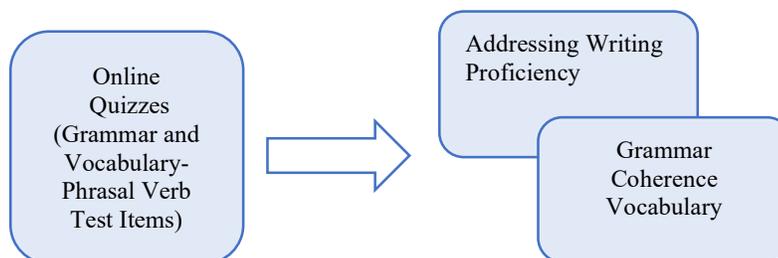


Figure 1. Concept Map of the Study

The study employed the Input-Process-Output (IPO) Model to investigate the impact of online quizzes on pre-service teachers' writing skills. During the input phase, it evaluated their basic writing abilities, including grammar, coherence and vocabulary, and introduced online tests as a kind of intervention. Pre-service instructors practiced grammar with online tests that provided real-time feedback during the process phase. The goal of this interactive, self-paced method was to improve writing abilities. The study assessed grammar, coherence, and vocabulary; identified common errors; and collected students' self-assessments of their development during the output phase (Figure 1). Several theories support the study, including Skill Acquisition Theory and the Cognitive Theory of Multimedia Learning. Skill Acquisition Theory explains how humans develop skills, progressing from initial learning to advanced expertise. According to [8], language learning resembles the acquisition of other skills in that it requires practice and feedback for improvement. Skill acquisition involves learning processes in which "skilled behaviors can become routinized and even automatic under certain conditions" [9]. Online quizzes support this process by reinforcing writing skills through self-correction and repeated practice. The Cognitive Theory of Multimedia Learning [6] explains how interactive features and digital technologies enhance learning by actively engaging cognitive processes. This theory supports the use of interactive, self-paced online quizzes to improve writing abilities. It further explains how students learn from the combination of words and images, making it highly relevant to multimedia use in higher education. The theory emphasizes instructional strategies that guide cognitive processes and promote the meaningful integration of new information [7].

2. Materials and Methods

2.1 Research design

Using a quasi-experimental design, this study determined the effects of online quizzes on writing proficiency of pre-service teachers, major in English. Participants' writing proficiency assessing the grammar, coherence, and vocabulary was explored before and after exposure to online quizzes through a pretest-posttest approach. This design allowed the researcher to evaluate the impact of online

quizzes on those categories, even without full experimental control [10].

2.2 The participants

The study involved seventy-two purposively selected pre-service teachers majoring in English, enrolled under the Bachelor of Secondary Education (BSEd) curriculum. These participants were distributed across three sections, spanning first- to third-year levels. All participants were on the verge of being deployed as student teachers or practice teachers, making the development of strong writing skills particularly essential. While the BSEd program includes other majors such as Filipino, Mathematics, Science, and Social Sciences, only English majors were selected as participants, given the essential role of writing proficiency in their future teaching responsibilities. All selected participants were exposed to the online quiz intervention designed to enhance their grammar, vocabulary, and overall writing competence in preparation for their student teaching experiences.

2.3 Data instrument and gathering procedure

The study employed 140 online test items developed to identify various categories of errors and administered using Google Forms. Students selected the correct option from a set of five answer choices for each item. The items were compiled into seven sets of 20-item grammar and vocabulary-phrasal verb tests, sourced from reputable online grammar websites and submitted for online quiz administration. The exams focused on grammar and vocabulary, with particular emphasis on two-word phrasal verbs that convey precise lexical meanings. The test items were validated by English faculty to ensure content accuracy and appropriateness. These online quizzes, which provided immediate feedback, were implemented as an intervention, and students were allowed to take each quiz up to three times within one week or more to improve their performance and achieve better or perfect scores. The intervention aimed to ascertain the quizzes' impact on participants' writing proficiency in terms of vocabulary, coherence, and grammar. The pre- and post-intervention essays of the participants were evaluated using a validated writing rubric. This rubric utilized a

4-point scoring guide to evaluate grammar, coherence, and vocabulary usage. Mastery and performance that exceeded expectations were indicated by the score of Excellent, while writing that failed to meet fundamental standards was denoted by the score of Needs Improvement. Grammar assessed the precision, appropriateness, and range of word choice, while coherence assessed the clarity of ideas, logical organization, and efficacy of transitions. This method enabled an objective and systematic evaluation of the effect of the online questionnaire intervention on the writing proficiency of students.

2.4 Pre-Intervention

The participants completed a written task assessed using the writing rubric. Additionally, seven sets of 20-item or a total 140 grammar and vocabulary test items sourced from online grammar websites were uploaded to Google Forms for online quiz administration. During the pre- intervention, the participants answered 20-item online quizzes three times a

week. Each quiz could be retaken up to three times until a perfect score was achieved, allowing students to review incorrect answers and reinforce learning. As post-intervention, the participants completed a second or post writing task. Their written work was assessed using the same writing rubric to measure improvements in grammar, coherence, and vocabulary.

2.5 Data analysis

Descriptive statistics, mean and standard deviation, frequency and rank were used to analyze participants' writing proficiency levels. Inferential tests, including the Kruskal-Wallis test and Wilcoxon were employed to determine significant differences in writing proficiency before and after the intervention.

3. Results and discussion

Table 1 presents the pretest and posttest writing proficiency of the participants, assessing their skills in grammar, coherence, and vocabulary.

Table 1. Pre-service teachers' writing proficiency as an entire group and in terms of grammar, coherence, and vocabulary, before and after exposure to online quizzes

Skills	Pretest (Mean)	Description	Posttest (Mean)	Description
Grammar	2.89 (.640)	Proficient	3.61 (.545)	Excellent
Coherence	2.81 (.642)	Proficient	3.54 (.580)	Excellent
Vocabulary	2.58 (.622)	Proficient	3.38 (.542)	Proficient
Total	2.76 (.634)	Proficient	3.51 (.555)	Excellent

The results show that prior to the online quiz intervention, pre-service teachers demonstrated a proficient level of writing (M=2.76; SD=.634); with vocabulary (M=2.58; SD=0.622), as the weakest area. After the intervention, overall writing proficiency improved to an excellent level (M=3.51; SD=.555), particularly in grammar (M=3.61; SD=0.545) and coherence (M=3.54; SD=0.580), indicating stronger sentence accuracy and organization. Vocabulary also improved (M=3.38; SD=0.542), though the progress was more moderate, suggesting a continued need for vocabulary development.

These findings indicated that online quizzes had a significant impact on writing proficiency, especially in grammar and coherence. However, vocabulary development required further emphasis to achieve well-rounded writing skills. This aligned with [2], who found that online quizzes enhanced motivation and grammar learning, with students expressing positive perceptions of quiz apps as engaging and improved learning outcomes. Similarly, [3] affirmed that online quizzes foster enthusiasm and encourage participation while strengthening comprehension through immediate feedback.

Table 2. Pre-service teachers' writing proficiency as to year level in terms of grammar, coherence, and vocabulary, before and after exposure to online quizzes.

Skills	Pretest (Mean)	Description	Posttest (Mean)	Description
Writing Proficiency	2.72 (.524)	Proficient	3.56 (.516)	Excellent
First Year				
Grammar	2.40 (.503)	Developing	3.50 (.513)	Excellent
Coherence	2.35 (.489)	Developing	3.15 (.366)	Proficient
Vocabulary	2.05 (.224)	Developing	3.10 (.308)	Proficient
Total	2.26 (.414)	Developing	3.25 (.395)	Proficient
Second Year				
Grammar	3.06 (.669)	Proficient	3.75 (.560)	Excellent
Coherence	2.94 (.669)	Proficient	3.70 (.592)	Excellent
Vocabulary	2.78 (.659)	Proficient	3.93 (.504)	Excellent
Total	2.92 (.665)	Proficient	3.79 (.552)	Excellent
Third Year				
Grammar	3.10 (.447)	Proficient	3.75 (.550)	Excellent
Coherence	3.05 (.510)	Proficient	3.70 (.571)	Excellent
Vocabulary	2.80 (.523)	Proficient	3.55 (.686)	Excellent
Total	2.98 (.493)	Proficient	3.66 (.602)	Excellent

Prior to the online quiz intervention, first-year students demonstrated a developing level of writing across grammar ($M=2.40$; $SD=.503$), coherence ($M=2.35$; $SD=.489$), and vocabulary ($M=2.05$; $SD=.224$). Second-year students performed at a proficient level in grammar ($M=3.06$; $SD=.669$), coherence ($M=2.94$; $SD=.669$), and vocabulary ($M=2.78$; $SD=.659$). Similarly, third-year students also showed proficiency: grammar ($M=3.10$; $SD=.447$), coherence ($M=3.05$; $SD=.510$), and vocabulary ($M=2.80$; $SD=.523$) (Table 2). Across all year levels, vocabulary consistently emerged as the weakest area compared with grammar and coherence. The results also suggest that pre-service teachers' writing proficiency improves naturally with academic progression. These findings indicate that before the intervention, pre-service teachers still had considerable room for improvement, particularly in vocabulary. As English majors, strengthening this area alongside grammar and coherence is essential for advanced writing competence. Prior research supports the effectiveness of online quizzes in addressing such needs. According to [8], language learning requires practice and feedback for improvement [9]. Posttest results in Table 3 showed

improvements across all areas for first-year students: grammar ($M=3.50$; $SD=.513$), coherence ($M=3.15$; $SD=.366$), and vocabulary ($M=3.10$; $SD=.308$). Second-year pre-service teachers reached an excellent level of writing proficiency in grammar ($M=3.75$; $SD=.560$), coherence ($M=3.70$; $SD=.592$), and vocabulary ($M=3.93$; $SD=.504$). Similarly, third-year participants also excelled, with grammar ($M=3.75$; $SD=.550$), coherence ($M=3.70$; $SD=.571$), and vocabulary ($M=3.55$; $SD=.686$). Among the categories, grammar showed the strongest gains for first- and third-year students, while vocabulary improvement was most notable among second-year students. These findings suggest that online quizzes are an effective tool for enhancing writing proficiency, particularly in grammar. However, additional instructional support—such as structured writing tasks or interactive discussions—may be necessary to further strengthen coherence and vocabulary, especially for first-year learners. [11] similarly found that online quizzes, when paired with guided feedback, significantly increased student motivation and satisfaction, leading to improved academic performance.

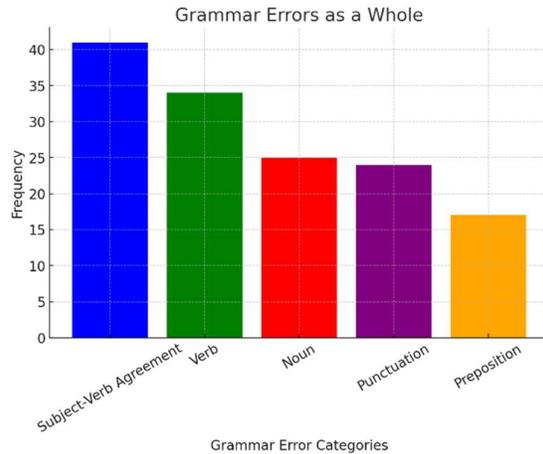


Figure 2. Pre-service teachers' most common grammar errors before exposure to online quizzes

Figure 2 shows that the most frequent grammar errors among pre-service teachers occurred in subject–verb agreement ($f=41$), verb usage ($f=34$), noun errors ($f=25$), punctuation ($f=24$), and prepositions ($f=17$). These findings suggest that students struggled most with parts of speech and agreement rules, which are fundamental to sentence structure and clarity. Such difficulties were evident across all year levels, though errors decreased by the third year, indicating gradual progress in grammar proficiency. Nonetheless, targeted reinforcement of agreement rules and sentence construction remains necessary, particularly for lower-year students.

Post-test results revealed a significant reduction in grammar errors, especially in subject–verb agreement, verb usage, and nouns. First-year students improved subject–verb agreement errors by 94.7% (19 to 1) and verb errors by 85.7% (21 to 3). Second-year students

reduced subject–verb agreement errors by 64.3% (42 to 15) and verb errors by 68.2% (22 to 7). Third-year students eliminated 100% of noun errors (6 to 0) and reduced subject–verb agreement errors by 53.3% (15 to 7). While punctuation errors decreased among first-year students (60% reduction) (Figure 3), they slightly increased among third-year students. Overall, the results confirm that online quizzes were effective in enhancing grammar proficiency, particularly in subject–verb agreement and verb usage. However, punctuation remains an area requiring further instructional reinforcement to ensure consistent improvement. This finding affirmed [12] found that online quizzes improved overall academic performance. Similarly, [13] reported that the Quizizz platform enhanced student achievement and language learning, further reinforcing the effectiveness of online quiz tools across diverse educational settings.

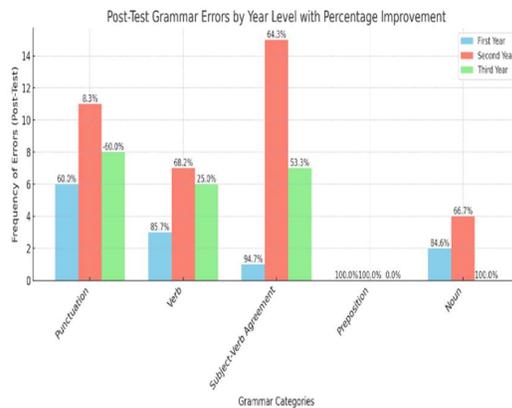


Figure 3. Pre-service teachers' most common grammar errors after exposure to online quizzes

Table 3. Differences in the Participants' Writing Proficiency in terms of Grammar, Coherence, and Vocabulary after Exposure to Online Quizzes.

Skills	Mean	W	p-value
Grammar		-5.85	.000
Pre-test	2.89		
Post-test	3.61		
Coherence		-6.128	.000
Pre-test	2.81		
Post-test	3.54		
Vocabulary		-6.503	.000
Pre-test	2.58		
Post-test	3.38		

The table revealed significant differences in participants' writing proficiency across grammar ($w = -5.85, p = .000$), coherence ($w = -6.128, p = .000$), and vocabulary ($w = -6.503, p = .000$). This indicates that exposure to online quizzes played a key role in enhancing writing proficiency. The findings suggest that integrating interactive learning methods, such as online quizzes and structured writing

activities, can effectively strengthen grammar, coherence, and vocabulary. These results support Mayer's Cognitive Theory of Multimedia Learning which stressed that interactive, self-paced online quizzes improve writing skills by promoting active processing, reducing cognitive overload, and fostering meaningful learning experiences [7].

Table 4. Differences in the Participants' Writing Proficiency in terms of Grammar, Coherence, and Vocabulary as to Year Level after Exposure to Online Quizzes.

Skills	Mean	df	H	p-value
Grammar		2	7.065	.029
Pre-test	2.89			
Post-test	3.61			
Coherence		2	.760	.684
Pre-test	2.81			
Post-test	3.54			
Vocabulary		2	5.717	.057
Pre-test	2.58			
Post-test	3.38			

Table 4 presents the Kruskal–Wallis test results on writing proficiency differences among year levels after exposure to online quizzes. A statistically significant difference was found in grammar ($H(2) = 7.065, p = .029$), indicating that the intervention had varying effects on grammar improvement across year levels. For coherence ($H(2) = .760, p = .684$) and vocabulary ($H(2) = 5.717, p = .057$), no significant differences were observed, suggesting that the impact of online quizzes on these areas was relatively consistent across

groups. These results imply that while online quizzes were particularly effective in enhancing grammar, additional strategies may be needed to strengthen coherence and vocabulary. Supporting this, [14] found Quizizz to be highly effective as a formative assessment tool. It not only enhanced self-regulated learning—a core element of formative assessment—but also increased student engagement. Learners with low to moderate English proficiency showed notable score improvements, with many describing the activity as “relaxing” and

identifying it as the most effective part of their class. Quantitative findings further confirmed substantial gains in English proficiency, underscoring the value of online quizzes in language learning.

4. Conclusion

Online quiz as an intervention is an effective strategy for improving pre-service teachers' writing proficiency. The intervention particularly enhances grammar and coherence skills. First- and third-year students showed greater improvement in grammar, while second-year students demonstrated stronger gains in vocabulary. Significant reductions were observed in subject-verb agreement, verb usage, and noun errors, though punctuation still required reinforcement. Overall, grammar showed the most improvement, but additional interventions are necessary to further strengthen coherence and vocabulary, especially for first-year students who began at a developing level. To build on these findings, vocabulary-enrichment activities should be incorporated alongside targeted exercises on punctuation and sentence structure. First-year students, in particular, would benefit from writing workshops, peer reviews, and guided practice to accelerate their development. Online quizzes should be integrated with interactive learning strategies such as discussions, writing prompts, and feedback-driven assessments to reinforce grammar and coherence retention. Since subject-verb agreement and verb usage errors were more common among lower-year students, structured drills and real-life writing applications are recommended. Finally, regular assessments and tracking of student performance will help identify persistent weaknesses and ensure sustained growth in grammar, coherence, and vocabulary. Additionally, research on Skill Acquisition Theory underscores that grammatical accuracy is enhanced by timely feedback and repeated practice. Consequently, in order to enhance the retention of grammar and coherence, it is recommended that online evaluations be implemented in conjunction with interactive learning strategies, including guided discussions, contextualized writing prompts, and feedback-driven assessments.

References

- [1] L. H. Satiman, N. Zulkifli, A. Usman, Utilizing Online Quiz Assessment Tool to Provide Timely, Guided Feedback During COVID-19 Pandemic. *Journal of Advanced Research in Applied Sciences and Engineering Technology* 35(1) (2024) 88-96.
- [2] N. V. Nguyen, K. T. Nhi, T. N. Ha, B. D. Tien, Assessing the Effectiveness of Quizizz Mobile App in Improving Grammar Competence among EFL Students, *Rupkatha Journal on Interdisciplinary Studies in Humanities* 16(2) (2024) 1 - 13 . <https://doi.org/10.21659/rupkatha.v16n2.01g>
- [3] N. Salsabila, T. K. Fiaunillah, Students' Perceptions on the Use of Online Quiz Platforms in English Literature Department UINSA, *Proceedings of International Conference on Islamic Civilization and Humanities*, 2023, pp. 728–738.
- [4] R. Alda, Exploring ChatGPT's Role in English Language Learning: Insights from Pre-Service Teachers, *Interdisciplinary Research Review* 20(6) (2025) 1-11.
- [5] D. Dimas, A. Alvindi, T. Khoirunnisa, R. Yani, P. Pardamean, K. Simanjuntak, Exploring Pre-Service Teachers' Difficulties of ChatGPT as a Tool for Planning the Learning Process, *Innovative: Journal Of Social Science Research* 5(1) (2025) 5906–5922. <https://doi.org/10.31004/innovative.v5i1.1780>
- [6] R. E. Mayer, *Cognitive theory of multimedia learning*. The Cambridge handbook of multimedia learning, 2005.
- [7] E. Staneviciene, G. Žekienė, The Use of Multimedia in the Teaching and Learning Process of Higher Education: A Systematic Review, *Sustainability* 17(19) (2025) 8859. <https://doi.org/10.3390/su17198859>
- [8] R. DeKeyser, *Skill Acquisition Theory*. New Jersey, USA: Lawrence Erlbaum Associates Publishers, 2007.
- [9] M. Taie, Skill acquisition theory and its important concepts in SLA, *Theory and Practice in Language Studies* 4(9) (2014) 1971–1976. <https://doi.org/10.4304/tpls.4.9.1971-1976>
- [10] D. Ary, L. C. Jacobs, C. Sorensen, *Introduction to research in education*, 8th

edition, California, USA: Wadsworth: Cengage Learning, 2010.

[11] C. A. Rodríguez, S. Valderrama, D. Vargas, M. A. Eliseo, C. C. Fracchia, K. Roa, Quizzes via Augmented Reality on Learning Management System: A Case Study of Moodle, *Journal of Educators Online* 20(1) (2023) 1-8.

[12] N. Zhang, M. Franklin, J. Hodges, Use of Online Formative Quizzes to Enhance Long-Term Retention of Knowledge in Chiropractic Students, *World Journal of Educational Research* 10(1) (2023) 1-10.

[13] A. Hanif, H. Herman, A. Mudinillah, P. W. L. Rahmi, Development of the Quizizz platform as an interactive quiz-based learning media for Arabic language lessons at Madrasah Ibtidaiyah, *International Journal of Membrane Science and Technology* 10(2) (2023) 372-384.

[14] P. Chulerk, S. Duangchinda Sathianpan, J. Khlaisan, Mobile Assisted Language Learning as a Formative Assessment Method to Enhance the English Competence of EFL Learners to the CEFR B1 Level, *rEFlections* 32(1) (2023) 462-486.

<https://doi.org/10.61508/refl.v32i1.280328>