Vocabulary Acquisition based on Personal Learning Pace

Nguyen Nam Khanh[1*], Tran Thi Nam Phuong[1], Tran Thi Thu Hoai[1]

[1] Thai Nguyen University of Education, Thai Nguyen, Vietnam
*Corresponding author's email: Nguyennamkhanh09@outlook.com
* https://orcid.org/0009-0000-7739-7323
https://doi.org/10.54855/ictep.24514

Received: 25/06/2024 Revision: 09/10/2024 Accepted: 26/10/2024 Online: 30/10/2024

ABSTRACT

The quasi-experimental study investigates the use of Flippity, an interactive online platform, to enhance vocabulary acquisition among 62 non-English major undergraduate students at Thai Nguyen University of Education. The research addresses a gap in the literature by focusing on the effectiveness of Flippity for Vocabulary learning at the undergraduate level. The study evaluates the impact of personalized, game-based learning on vocabulary retention through home-based practice. Results show significant improvements in the vocabulary proficiency of the experimental group using Flippity, demonstrating that the platform effectively supports vocabulary learning. These findings suggest that Flippity can be a valuable resource for educators, providing a flexible and engaging tool for improving vocabulary acquisition in home environments.

Keywords: Vocabulary enhancement, English vocabulary, Flippity, non-English majors

Introduction

Vocabulary acquisition is fundamental to language learning, impacting reading, writing, listening, and speaking proficiency. Non-English majors face significant challenges due to limited exposure to English outside the classroom (Zhi-Liang, 2010; Yan, 2011; Ashraf, 2015; Afrin, 2016; Chung et al., 2021; Ngan, 2021; Trinh & Pham, 2021; Wang, 2021), leading to constraints related to retaining vocabulary. Technological advancements have supported learning by providing vast online resources (Criollo-C, Guerrero-Arias, et al., 2021) – fostering connectivity and interaction in Education 2.0 and 3.0 (Barreiro, 2022). Education 4.0 merges digital, biological, and physical aspects, enhancing modern skill acquisition, including language learning. Integrating technology in the language classroom bridges the gap between printed material and digital learning through varied vocabulary activities (Kilickaya & Krajka, 2010). Innovative methods, like Flippity, transform Google Sheets into interactive tools such as flashcards and quiz games, making vocabulary learning more engaging. In terms of Flippity applications, prior research has underscored the efficacy in enhancing learning outcomes across diverse participant demographics. Recently, Wong and Yunus (2023) conducted a quasi-experimental mixed-method study involving thirty Year 5 students, which yielded marked enhancements in their speaking abilities' accuracy, fluency, range, interaction, and coherence. Similarly, Tetty (2022) conducted the classroom action research over two cycles, underscoring

CITATION | Nguyen, N. K., Tran, T. N. P., & Tran, T. T. H. (2024) Vocabulary Acquisition based on Personal Learning Pace. *ICTE Conference Proceedings*, 5, 180-201. ISSN: 2834-0000. ISBN: 979-8-9870112-5-6. DOI: https://doi.org/10.54855/ictep.24514

the efficacy of Flippity in enhancing English speaking fluency among twenty grade 5 elementary students through various interactive activities. Additionally, Trčková et al. (2022) exclusively utilized Flippity's flashcards to augment student engagement and motivation across lower and upper secondary levels. While prior studies have highlighted the efficacy of Flippity in enhancing English-speaking skills from elementary to upper secondary levels, it is necessary to bridge the gap by examining enhancing vocabulary at the undergraduate level.

Undergraduate students at Thai Nguyen University of Education face several vocabulary-related problems. One significant issue is the limited vocabulary range, which makes it challenging for students to find suitable terms or synonyms when they forget the exact vocabulary or need to expand their answers. Furthermore, many students struggle with expanding their vocabulary, which impacts their fluency and comprehension during conversations. Additionally, pronunciation errors, often arising from limited vocabulary, are frequent and cause difficulties for listeners, further complicating intentions. A study by Yen et al. (2023) highlighted significant difficulties in speaking, grammar, and vocabulary among non-English majors at Thai Nguyen University of Education. This study focuses on improving English speaking skills; therefore, the authors found that learners are usually unwilling to speak in English due to vocabulary-related problems.

This study's significance lies in its evaluation of Flippity, an innovative online platform that provides tools to gamify vocabulary in English language learning activities as a means of enhancing vocabulary acquisition. By leveraging Flippity's interactive, game-based features, omitting the – writing process, and engaging in rote learning memories, the research aims to capitalize on increased student motivation and engagement influencing vocabulary acquisition and self-correction using Flippity through voice feature and practice dictation at personal residents. The findings can offer an effective alternative vocabulary learning method and a positive reinforcement tool for general teachers and educators, particularly in large class sizes, for vocabulary checking and dictation activities with the use of spelling practice tools.

Literature review

Definition of Vocabulary

In the realm of language teaching, the definition of vocabulary holds various perspectives, each contributing to a deeper understanding of this linguistic element. Ur (2012) characterizes vocabulary as a single word or a combination of more than one word; expanding from this, vocabulary is assumed extensively beyond isolated words to encompass multiword expressions (Scrivener, 2005). Based on this idea, the term “multiword” is also mentioned by Numan (2003), referring to combinations or sequences of words functioning cohesively as a unit, expressing a singular concept or idea. This perspective acknowledges the significance of language beyond individual words, emphasizing the cohesive nature of multiword expressions.

In summary, the definition of vocabulary, drawing from the scholarly contributions of Penny Ur, David Nunan, and Jim Scrivener, emerges as a rich, multidimensional concept that encompasses not only individual words but also complex multiword units. This comprehensive view highlights the intricate interplay between vocabulary and other linguistic components within language learning and development contexts. Therefore, the researchers prefer to use "vocabulary."

Dynamics of Vocabulary Acquisition

Transitioning to the vocabulary learning domain, vocabulary's critical role in language

acquisition is undeniable. The intentional effort required in second language vocabulary acquisition, especially in the initial stages, emphasizes the necessity of reaching a threshold level of frequent words for language skills and knowledge to develop. Effective vocabulary involves the retrieval of both receptive and productive knowledge, requiring deep processing for oral and written, also known as long-term retention (Nation, 2013; Altalhab, 2018). Similarly, the achievability of knowledge is underscored by Pauk and Owens (2010), which is explicitly demonstrated by the concept of frontier words. They advocate against skipping the frontier vocabulary area, emphasizing that attempting to learn entirely unknown words can be highly inefficient and counterproductive. This highlights the most significant advancement in vocabulary mastery occurs in this frontier area, where many nearly known words only require minor adjustments to become familiar, including their semantics and pronunciation. To be more specific, the process involves deepening the knowledge of the existing vocabulary and adding unfamiliar vocabulary into a network of form-meaning connections (Pauk & Owens, 2010; Ellis, 2015), underscoring a dynamic and multifaced process of vocabulary acquisition that extends beyond mere root learning.

Furthermore, understanding vocabulary size and coverage is crucial in setting learning goals. As formulating, Nation (2006, 2013) and Hsueh-Chao and Nation (2000) advise incorporating the vocabulary size of native speakers, while also emphasizing the crucial relationship between vocabulary coverage (the percentage of known words in a text) and reading comprehension (Ehri & Rosenthal, 2007; Nation, 2013). In general, native speakers learn 1,000-word families every year until the age of 20, and this figure will be 20,000 for well-educated or around 32,000 vocabulary items, excluding proper names, in comparison to non-native speakers, at 8,000 to 9,000 (Nation, 2013; Renandya & Widodo, 2016). To attain an optimal coverage level of 98%, native speakers must possess a vocabulary of 8,000 - 9,000-word families for effectively engaging with most written texts. Additionally, evidence suggests a parallel between the number of word families necessary to grasp 95% of text in various genres for both young and adult native speakers, ranging from 3,000 to 4,000 words (Nation, 2006, 2013; Webb & Macalister, 2013). This correlation underscores the strategic significance of comprehending vocabulary dimensions to facilitate successful language learning outcomes.

The Benefits of Technology Integration in Teaching

Amidst the COVID-19 pandemic, synchronous online teaching emerged as a pivotal paradigm shift in the education landscape, necessitating the transition of all meetings and social interactions to videoconferencing platforms (LaFond, 2023). However, it's crucial to recognize the fundamental distinctions between online teaching and traditional face-to-face (f2f) instruction. Many educators initially relied on teaching plans designed for physical classrooms, resulting in extended teaching duration exceeding 50 minutes. This prolonged screen time led to various health concerns, including eyestrain, burnout, and overload among educators and learners alike, alongside academic performance (Carvalho et al., 2020; Thanh et al., 2020; Li et al., 2021; Sunawan et al., 2021).

Moreover, in education, the rise of short-form content on social media platforms has raised concerns about students' cognitive engagement and attention span during synchronous sessions (Zhu et al., 2022). Specifically, studies suggest that limiting synchronous and asynchronous online teaching sessions to 6 to 12 minutes can mitigate these challenges (Sunawan et al., 2021). Additionally, prompting a shift in teaching pedagogy and applying student-centered teaching methodologies becomes crucial (Afify, 2020; Revadekar et al., 2020).

Furthermore, during classroom sessions, the integration of activities via online learning tools is crucial, rather than having the teacher only impart information or students answer single-answer

questions after learning. According to Wiggins and McTighe (2005), this approach might be termed "teaching by mentioning" or felt in the twin sins.

Turning to the post-pandemic of COVID-19, in offline classes, plenty of teachers increasingly prefer to use technology-integrated activities, which are assumed to be fun and to motivate students' engagement (Agca & Özdemir, 2013; Alanezi & AlAzwani, 2020). Nevertheless, these activities may fall into the first sin of traditional design – "minds-on without hands-on" (Wiggins & McTighe, 2005; Yannier et al., 2021).

According to Barreiro (2022), in order to ensure learning is based on the new way and study outcomes based on the new work environment, technologies should always be included as a part of the curriculum; therefore, the way of imparting at school might need to be reconsidered in terms of the use of technology in the teaching process. To address the issue, the wide range of learning tools has contributed to fostering students' autonomy, especially vocabulary acquisition tools that support students outside of the classroom (Kilickaya & Krajka, 2010; Lan, 2013).

Technology integration into language learning has become increasingly popular, driving a need to understand factors influencing its effectiveness in technology-enhanced language learning (TELL) environments. Additionally, TELL serves as the overarching concept that includes both computer-assisted language learning (CALL) and mobile-assisted language learning (MALL) (Yaman & Ekmekçi, 2016; Hidalgo, 2020), with each approach contributing to enhancing language experiences. One such factor is student technological efficacy, which refers to language learners' beliefs about their ability to successfully use technological tools and resources for developing language competence. As modern language curricula and materials continue to incorporate digital components like TELL platforms, CALL/MALL apps, online dictionaries, video/audio tools, and more, learners' confidence in using these technologies can impact their engagement, persistence, and ultimate achievement.

Theoretical models like the Technology Acceptance Model (Davis, 1989) and computer self-efficacy theory (Compeau & Higgins, 1995) have been applied to examine the role of technologically enhanced and mobile-assisted language learning. These frameworks suggest that learners' judgments of their technological capabilities shape their attitudes and usage behaviors when TELL, encompassing CALL and MALL, is integrated into instruction.

A growing body of research has explored the impacts of technological efficacy on language learning processes and outcomes in CALL and MALL environments. Several studies have found positive relationships between higher technological efficacy and factors like motivation to use CALL/MALL for language practice (Yu et al., 2021), acceptance of mobile language apps (Pindeh et al., 2016; García Botero et al., 2018; Criollo-C, Lema, et al., 2021; Al-Bashayreh et al., 2022), engagement with online activities (Dixson, 2010; Looyestyn et al., 2017; Salas‐Pilco et al., 2022) and development of language skills (Deris & Shukor, 2019; Klimova & Polakova, 2020) through technology integration. Conversely, low technological efficacy has been associated with avoidance of technological resources and struggle to gain benefits from CALL/MALL

Some researchers have examined technological efficacy specific to particular language skills in TELL contexts. A meta-analysis synthesizing multiple studies found that language learners who approached with technological resources and tools (such as apps, online dictionaries, and digital flashcards) achieved greater vocabulary gains compared to learners in traditional, non-technology-assisted conditions (Lu, 2008; Hao et al., 2021). For example, Serag (2011) and Miyazoe and Anderson (2010) reported efficacy beliefs that predicted the use of technological

tools to develop writing skills among Japanese EFL learners. Hwang et al. (2014) found a similar effect for online listening practice activities in a Taiwanese context. Alemi et al. (2012) investigated the impact of MALL, and their findings had a significant contribution to enhancing long-term academic vocabulary retention more effectively than traditional dictionary methods.

Previous experiences with technology can influence language learners' technological efficacy, training received, availability of support resources, and individual dispositions towards digital tools, instructors who provide guidance on using TELL/MALL technologies and create low-risk opportunities for practice may help bolster learners' learning efficacy (Hampel, 2015; Stickler & Hampel, 2015; Stickler et al., 2020). However, gaps remain in understanding optimal strategies across different CALL/MALL educational contexts and learner populations.

As CALL and MALL continue being integrated into language curricula worldwide, research indicates that attending to learners' technological efficacy will be important for maximizing the potential benefits. Fostering confidence and skills in using digital language learning tools could enhance learners' motivation, engagement, and achievement (Vo et al., 2023). Moreover, further investigation into developing technological efficacy, particularly for varying language skills, proficiency levels, and CALL/MALL environments, would valuably inform language teaching methodology and technology implementation approaches.

Personal learning pace

Personal learning pace is a flexible educational approach in which individuals control the timing and speed of their learning activities. In other words, learners allow themselves to complete the course or task intensively or even for a much longer duration of time (Georgiadou & Siakas, 2006). This mode of learning allows learners to engage with educational materials and complete tasks at a pace that suits their personal schedules and learning preferences (Naidu, 2008). Personal learning pace can occur in online environments.

Online personal learning pace leverages digital technologies, including learning management systems such as Google Classroom, Canvas, and Moodle and communication tools such as Zalo and Gmail (Thomas, 2011; Santiana et al., 2021; Le & Tran, 2022; Mpungose & Khoza, 2022). These technologies provide access to various resources and enable learners to interact with educators and peers at their convenience. This method offers significant flexibility, making it easier for learners to balance their studies with other schedules.

Several studies have highlighted the benefits of a personalized learning pace. Research by Mojarad et al. (2018) indicates that students with high consistency in their learning pace tend to achieve better outcomes. For example, group number 4—the Gritty—characterized by high consistency and effort, achieved very high mastery levels. Additionally, Tullis and Benjamin (2011) found that the pace of self-learning increases students' retention rates due to self-regulation of time and study behavior (Nation, 1990).

In relation to vocabulary acquisition, learning at students' own pace can lead to significant improvement. Without feeling rushed or held back, leaners are allowed to review and practice new vocabulary as needed, according to Min (2013). The research also emphasizes the importance of systematic vocabulary learning for effective vocabulary acquisition. To be more specific, it highlights that the target vocabulary should be organized systematically by categorizing and organizing into thematic groups, utilizing semantic mapping to create connections, and building word families to deepen understanding are key strategies.

The application of Flippity in this study offers personalized learning by making interactive tools available that students can use at their own pace. Flippity allows learners to engage with vocabulary exercises and self-assessment mode as frequently and intensively as they need to,

catering to their own learning pace.

Flippity

Flippity is a freeware website that offers a variety of online tools and templates primarily designed for educators and students. These tools are often used with Google Sheets, and with 28 freely available templates, teaching professionals can be employed to create interactive activities, games, and resources for educational purposes. Flippity provides templates for things like flashcards, quizzes, bingo, and more, making it a useful platform for those in the field of education.

As a freeware website for education, internet users who intend to use Flippity access the website at Flippity.net (Trčková et al., 2022). Flippity.net provides a user-friendly platform for creating Spelling Words activities through Google Sheets. To initiate this process, users are required to modify a provided Google Spreadsheet template (Flippity.net Spelling Words Template - Google Sheets) (Giyatmi, 2021), allowing customization of students' names and up to 50-word lists. Additional features include the option to add clarifying phrases for homonyms and setting up automatic email notifications for quiz results.

After modifying the template, users proceed to publish their spreadsheet by accessing the File menu, selecting Share, and then choosing Publish to Web. Subsequently, obtaining the Flippity.net link is accomplished through the "Get the Link Here" tab in the template. This link serves as the gateway for users to view, practice, or take quizzes on their spelling words. Furthermore, a Quiz-only link to prevent students from accessing the List or Practice tabs.

In conclusion, Flippity, with its user-friendly platform that requires no registration, is an idea for educators and learners alike, with the possibility of parental involvement when necessary. Furthermore, from the perspective of learners, there exists an empowering dynamic wherein they actively engage in selecting their preferred mode of learning. This flexibility underscores Flippity's adaptability to diverse educational contexts and emphasizes its potential as a versatile tool catering to both teachers and learners alike.

Prior research has underscored the efficacy of enhancing learning outcomes across diverse participant demographics. Recently, Wong and Yunus (2023) conducted a quasi-experimental mix-method study involving thirty Year 5 students, which yielded marked enhancements in their speaking abilities' accuracy, fluency, range, interaction, and coherence. Similarly, Tetty (2022) conducted the classroom action research over two cycles, underscoring the efficacy of Flippity in enhancing English speaking fluency among twenty grade 5 elementary students through various interactive activities. Additionally, Trčková et al. (2022) exclusively utilized Flippity's flashcards to augment student engagement and motivation across lower and upper secondary levels. While prior studies have highlighted the efficacy of Flippity in enhancing English-speaking skills from elementary to upper secondary levels, it is necessary to bridge the gap by examining enhancing vocabulary at the undergraduate level.

This study's significance lies in its evaluation of Flippity, an innovative online platform that provides tools to gamify vocabulary in English language learning activities as a means of enhancing vocabulary acquisition. By leveraging Flippity's interactive, game-based features, omitting the – writing process, and engaging in rote learning memories, the research aims to capitalize on increased student motivation and engagement influencing vocabulary acquisition and self-correction using Flippity through voice feature and practice dictation at personal residents. The findings can offer an effective alternative vocabulary learning method and a positive reinforcement tool for general teachers and educators, particularly in large class sizes, for vocabulary checking and dictation activity with the use of spelling practice tools.

Research Questions

The authors endeavor to investigate the following research inquiries:

1. What are the effects of Flippity on vocabulary acquisition of non-English majors at Thai Nguyen University of Education?
2. What are the attitudes of non-English majors at Thai Nguyen University of Education towards the use of Flippity to learn vocabulary?

Methods

Pedagogical Setting & Participants

The study was conducted at Thai Nguyen University of Education to enhance non-English major students' vocabulary using the Flippity platform. It spanned from 15 to 30 periods for the practical phase of an English module within a semester. Following a quasi-experimental research design, two groups of 31 undergraduate non-English majors actively participated, each with moderate proficiency levels. One group, the experimental group, received the designated treatment using a spelling practice tool on the Flippity platform to enhance vocabulary, while the other group served as the control and did not receive the treatment.

Learning Instruments

In this research, learning materials include a website for storing vocabulary that researchers created based on the Life Vietnam edition (A2-B1) coursebook (Hughes et al., 2023) and attached the directed links from Flippity Spelling Words. Instructional material is limited to the four units of the coursebook, namely Health, Competitions, Challenges, and Transport.

Prior to publishing on Flippity, all the coursebook vocabulary was meticulously converted into Google Sheets documents. The website, designed using readymag.com, was thoughtfully structured to showcase new vocabulary associated with each unit. These vocabulary lists were systematically organized into 7 to 9 groups, each containing 9 to 10 words (Laufer, 1990), for a total of 287 vocabulary words. Importantly, the researchers synchronized these lists with Flippity, ensuring a methodical alignment between the content presented and the curated lists.

Research Instruments

Test

The test's response options were meticulously presented through single-word or phrase selections labeled as A, B, and C with content. Further customization was integrated into the assessment, with the content of the 10 sentences covering the first 4 topics of the coursebook. In order to ensure the test assessed a wide range of English proficiency levels (ranging from A1-A2, B1-B2, to C1-C2) of the test, two lecturers from the Foreign Language Department of Thai Nguyen University of Education participated in the review process.

Questionnaire

The questionnaire, adapted from Chung et al. (2021), examined participants' interaction with the learning intervention in research question number two. It consisted of 10 questions, each with 5 response options (strongly disagree; disagree; neutral; agree; strongly agree).

Design of the Study

The project proceeds through three distinct stages with the use of tests and questionnaires as the main data collection instruments:

Stage 1: Participants individually undertook the assessment via Microsoft Forms during the pre-test phase. Within this task, participants were required to scrutinize cloze sentences and select the most appropriate answer for the blank. The outcomes were meticulously documented in Microsoft Forms, subsequently exported, and preserved in Microsoft Excel for further analysis.

Stage 2: All experimental group participants collaborated within a group facilitated by the Zalo platform, which served to monitor the progression of vocabulary practice. In the vocabulary acquisition stage, learners review vocabulary via the website and Flippity after studying the teacher's presentation. Researchers disseminated instructional links and provided access to the learning website to employ the given tasks as home vocabulary practice via the assistance of personal technology devices, such as smartphones, tablets, laptops, etc. Furthermore, participants accessed the Flippity button at the site's header to facilitate learning and practice through Spelling Words. Additionally, Word scramble, and Word Search options were made available for offline learning for each list corresponding to every unit. These materials were designed to be both printable and downloadable, with storage facilitated through OneDrive. Upon completion of the online tasks, participants conveyed their quiz learning mode results by capturing their device screens and submitting them to the group chat for submitting the completed tasks. The control group they are not involved in vocabulary learning at home via the website and Flippity.

Stage 3: In the post-test phase, the participants of the two groups re-completed the test, which had the same content as the pre-test. The questionnaire was delivered to those who finished the post-test of the experimental group. All the information submitted by the participants was saved into Microsoft Forms and then exported to Microsoft Excel.

The authors used quasi-experimental research to evaluate vocabulary enhancements for non-English major undergraduate students and to explore their attitudes toward using the Flippity platform for vocabulary acquisition. The quasi-experimental design intends to measure the impact of the Flippity intervention by comparing the outcomes before and after the intervention within a structured but non-randomized setting. This approach helps to provide evidence of the intervention's effectiveness despite the inherent biases of non-randomization.

Data Collection & analysis

Describe the study procedure, tools, and analysis methods to respond to the research questions.

During the analysis phase, the test scores and questionnaire were compared and calculated using IBM SPSS Statistic 27 (27.0.1.0 version) from the International Business Machine Corporation and Microsoft Excel. The process of participant quantitative calculation involved several sequential steps:

The results of the pre-test and post-test following the implementation of the new learning method were meticulously analyzed using frequency and paired sample tests to clearly illustrate the progress observed in the score data.

To enhance the statistical findings' interpretability, the questionnaire items' results were meticulously tallied,, transformed into percentage values, and thoughtfully visualized through charts and tables. This comprehensive approach ensures a robust understanding of the data and its implications.

Results

Test Results

Students' pre-test and post-test scores of the academic achievement test about their vocabulary knowledge were analyzed with a table of related frequencies. There is a significant difference between pre-test and post-test results after the analysis.

Table 1

Pre-test score distribution of experimental and control groups by CEFR levels

Score range	Level	Experimental group		Control group	
		Frequency	Percentage	Frequency	Percentage
1-5	**A1**	1	3.2	3	9.7
6-10	**A2**	26	83.9	22	71.0
11-15	**B1**	4	12.9	5	16.1
16-20	**B2**	0	0	1	3.2
21-25	**C1**	0	0	0	0
26-30	**C2**	0	0	0	0
Total		**31**	**100**	**31**	**100**

The table provides a site to perform a distribution of experimental and control groups, categorized by the six levels of score ranges, each corresponding to an English language proficiency as defined by the Common European Framework of Reference for Language (CEFR).

Overall. The chat resumes were scaled from A1 to B1, with the majority of participants achieving levels below B2.

Regarding the experimental group, the majority of students (83.9%) scored within the A2 level (6-10 points), while 12.9% fell within the B1 level (11-15 points), and a small portion (3.2%) scored in the A1 level (1-5 points). None of the students in this group achieved scores in the B2, C1, or C2 ranges.

Similarly, in the control group, the largest proportion of students (71.0%) also scored within the A2 level, followed by 16.1% in the B1 level, and 9.7% in the A1 level. Notably, one student (3.2%) reached the B2 level, but no students scored in the C1 or C2 levels.

These results suggest that both groups had comparable vocabulary proficiency at the beginning of the experiment, with most students in both groups falling within the A2 level, and neither group displaying advanced proficiency at the start. This balanced distribution highlights the validity of comparing these groups in the subsequent study phases.

The results indicate a notable increase in mean scores from the pre-test to the post-test (Table 1), rising from 9.25 to 15.75. This substantial improvement suggests that participants significantly enhanced their vocabulary knowledge after using Flippity. Additionally, the range of scores expanded from 5-11 in the pre-test to 8-21 in the post-test, highlighting that while some participants achieved much higher scores, there was also greater variability in the results. The increase in standard deviation from 1.44 to 4.27 further supports this, indicating a wider spread of scores in the post-test. This suggests that while some participants experienced significant gains, others made more modest improvements.

Table 2

Vocabulary test results of the experimental and control group

		Experimental group		Control group	
		Pre-test	**Post-test**	**Pre-test**	**Post-test**
Minimum score		5.00	8.00	2.00	3.00
Maximum score		11.00	21.00	16.00	19.00
Mean		9.25	15.75	8.29	9.84
Std. Deviation		1.44	4.27	1.44	5.05
Paired Samples Test	**Sig. (2-tailed)**	**0.000**		**0.159**	

Most compellingly, the p-value of 0.000 is well below the conventional threshold of 0.05, confirming that the improvement in scores is highly significant and unlikely to be due to random chance. This highlights the educational value of this learning tool for vocabulary acquisition.

The results for the control group show an increase in mean scores from the pre-test to the post-test, rising from 8.29 to 9.83. This indicates a modest improvement in the participants' vocabulary knowledge over time, even without the intervention of Flippity. The range of scores expanded slightly from 2-16 in the pre-test to 3-19 in the post-test, suggesting that some participants improved their scores significantly while others did not show as much change. The increase in standard deviation from 1.44 to 5.05 indicates a greater variability in post-test scores compared to pre-test scores. This higher standard deviation in the post-test suggests that there was a wider spread of scores, implying that the control group experienced varied outcomes in their learning progress.

The p-value is 0.159. This indicates the probability of observing a difference as extreme as, or more extreme than, the one observed if the null hypothesis of no difference is true. Since this p-value is greater than the conventional alpha level of 0.05, the researchers do not reject the null hypothesis

Questionnaire Results

The questionnaire measuring participants' interaction with the learning intervention was conducted after the post-test. The data collection form contains ten questions with a Likert scale.

Table 6 reveals significant insights into participants' perceptions of Flippity as a tool for vocabulary learning. Overall, these findings indicate that participants strongly perceive Flippity's effectiveness in various aspects of vocabulary learning. The high percentages of agreement suggest that Flippity is a valuable tool for educators to consider incorporating into their vocabulary instruction strategies.

Regarding the question that measures the effectiveness of learning vocabulary on Flippity, a significant majority of students either agree or strongly agree that spelling practice is effective for learning vocabulary, at 40.60% and 37.50%, respectively. This positive sentiment is consistent across various statements. Meanwhile, a minority of students disagreed with the statement, with "strongly disagree" and "disagree" accounting for under 4%. Additionally, nearly 20% of students took a neutral stance, giving no clear opinion on the effectiveness of learning vocabulary on Flippity. This strong positive perception suggests that Flippity is widely

regarded as an effective method for vocabulary acquisition.

Table 6

Questionnaires outcomes

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Students' opinions about the effectiveness of learning vocabulary on Flippity	2.10%	1.70%	18.10%	40.60%	37.50%
2. Students' opinions about the effectiveness of learning vocabulary by spelling practice on Flippity	0.00%	21.90%	0.00%	37.50%	40.60%
3. Students' perception related to the improvement of dictation and vocabulary via spelling practice on Flippity	1.30%	0.00%	20.60%	40.60%	37.50%
4. Students' opinions about the helpfulness of spelling practice for expanding vocabulary on Flippity	0.00%	3.10%	28.10%	37.50%	31.30%
5. Students' opinions about confidence supporting applying new vocabulary in a productive skills context after applying the spelling practice method on Flippity	4.20%	5.20%	37.50%	37.50%	15.60%
6. Students' perception of spelling practice via Flippity enhances the retaining competence and precise utilization of the new vocabulary	15.60%	12.50%	0.00%	31.30%	40.60%
7. Students' opinions that spelling practice is an efficient way in terms of time to learn and retain vocabulary via Flippity	10.60%	10.50%	1.50%	40.40%	37.00%
8. Students' opinions related to recommending spelling practice on Flippity as an enhancing vocabulary method for others	1.20%	10.10%	10.60%	40.60%	37.50%
9. Students' opinions that spelling practice is one of the effective methods of vocabulary learning methods	9.40%	7.40%	14.40%	37.50%	31.30%
10. Students' opinions about the regular use of spelling practice learning and reinforcing vocabulary	5.30%	12.60%	10.20%	34.40%	37.50%

The statement assessing the effectiveness of spelling practice on Flippity reveals a clear, strong opinion, with 78.10% of participants agreeing. In terms of the opposite opinion, only 21.90% of participants disagreed, and no one showed strong disagreement. Similarly, no one chose the neutral option. This indicates a clear consensus among participants that spelling practice on Flippity is beneficial for learning vocabulary.

Results of students' perception related to the improvement of dictation and vocabulary via spelling practice reveal a strong stance of agreement, with 78.10% agreeing or strongly agreeing, which was higher than the 20.60% who were neutral. This suggests that most of the students surveyed view spelling practice as a beneficial tool in language learning. Only 1.30%

strongly disagreed, and no one disagreed.

Students' perceptions about spelling practice enhancing the retention and precise utilization of new vocabulary are clear from the chart: the majority of students either agree or strongly agree with this statement, accounting for 31.30% and 40.60%, respectively. This suggests that more than half of the students believe in the effectiveness of spelling practice in improving their vocabulary retention and usage. No students remained neutral on this issue, indicating strong opinions. On the other hand, a significant minority of students disagreed or strongly disagreed with the statement, making up 12.50% and 15.60%, respectively. These students might believe that there are more effective methods for vocabulary retention and usage than spelling practice.

Finally, the data on the regular use of spelling practice for vocabulary learning and reinforcement suggests varied perceptions. A notable percentage, accounting for 37.50% of respondents, strongly agree with the statement, indicating that a significant percentage of people are sure about the effectiveness of spelling practice in vocabulary learning. Following this, individuals who agree comprised 34.40%, indicating a high frequency of daily vocabulary practice on Flippity. However, the lowest percentage of respondents (12.60%) disagreed, and 5.30% strongly disagreed with the statement, suggesting that the learning platform's frequency was relatively low. Interestingly, over 10% of the respondents gave unclear responses regarding the frequency of use. This high level of agreement highlights the perceived benefits of regular practice using Flippity in reinforcing vocabulary learning.

In summary, the average proportion of "agree" and "strongly agree" responses was greater than that of "disagree" and "strongly disagree" responses, with an average of 72.43% agreeing. It can be deduced that the majority opinion leans towards agreement with the application of spelling practice for vocabulary acquisition. Additionally, the distribution across these categories suggests a few key insights. While answering questions 4 and 5, some respondents might have avoided choosing extreme responses (strongly agree and strongly disagree). The statements might have had a low level of objectivity, leading to the result of taking a stance. This finding was in line with the statement of Christopher (2022) in helping students enhance vocabulary.

Discussion

Summarizing the results of the studies.

The results of this study provide valuable insights into Flippity's effectiveness as a tool for vocabulary acquisition among non-English majors at Thai Nguyen University of Education.

The improvement of the experimental group test scores with positive questionnaire results highlights the effectiveness of Flippity in transforming vocabulary learning into an educational setting. Additionally, learning pace and learning at the personal level suggest a further promising direction for the future of education and further research.

Interpretation of the results

The experimental group's pre-test results indicated that most participants were able to grasp basic vocabulary related to personal and familiar topics at the A2 level. After the intervention with Flippity, the post-test results showed that participants could understand and use more complex vocabulary, which supported expressing what they were thinking on a variety of topics.

The results showed a significant improvement in the post-test scores of the experimental group,

indicating that Flippity positively impacted vocabulary acquisition. The tool's game-based features, like spelling practice, helped students learn at their own pace, providing autonomy in learning which has been shown to improve retention and understanding (Chuah & Lim, 2018; Borova et al., 2021). The experimental group showed a more substantial improvement compared to the control group, which did not use Flippity. The significant difference in the post-test mean scores between the groups highlights Flippity's role in enhancing vocabulary retention, showing that a technology-integrated method can outperform traditional teaching methods.

A crucial aspect of your findings relates to learning pace. Since students could engage with the material at home and review it as needed, this personal learning pace likely contributed to the improved vocabulary acquisition. This aligns with the self-paced learning model discussed in prior research, where autonomy in learning fosters better academic outcomes (Guay et al., 2016; Kashefian-Naeeini & Kouhpeyma, 2020; Reinders, 2020).

Based on the questionnaire results, this study was about the ability of participants to learn without rushing and pressure, which could be created during classroom sessions (Sasi et al., 2017; Paine, 2019; Sivalingam, 2022). This suggests that using Flippity potentially controls their comfort of learning as a personal residence, which was the key factor contributing to the overall success of this vocabulary acquisition process. Additionally, the principles of autonomous learning align well with this self-paced learning model (Moore, 1972; Howard & Scott, 2017; Ilgaz, 2019; Ardito, 2020; Trang, 2021), motivate students to study more complex topics in terms of vocabulary, which can enhance retention and insight of new vocabulary. By revisiting the vocabulary multiple times, they can ensure the ability to understand and retain new vocabulary. In relation to traditional classroom settings, the teachers might take control of the pace while some students have slowed, moderate, or even fast acquisition speed (Sturt, 1921; Wang, 1983; Khan & Madden, 2016; Ngo, 2023). Therefore, learning at personal residence by the use of Flippity is likely to contribute to creating a positive learning experience, allowing learners to focus and engage with learning material themselves.

Conclusion

Summarizing the results

The research aimed to bridge the gap around Flippity's effects on vocabulary acquisition of non-English majors at Thai Nguyen University of Education. It also aimed to find out whether learners are willing to use the learning application to learn vocabulary and whether it provides a positive learning experience.

The questionnaire results answered the second research question, indicating that learners generally leaned towards agreement on using spelling practice as a vocabulary learning method. The main findings from the questionnaires indicate that a considerable proportion of participants endorsed the learning intervention that employed spelling practice for vocabulary acquisition. Consequently, it is reasonable to assume that online vocabulary applications, such as Flippity, are helpful tools for students to self-study with a diversity of learning modes.

Overall, this research contributes valuable insights to the field of language instruction by implementing a learning tool to foster vocabulary retention outside classroom environments among undergraduate non-English major students. Furthermore, it is imperative that educators have an appropriate teaching methodology and curricula to help ESL learners achieve language learning goals.

Recommendation

It is crucial to integrate Flippity comprehensively into the curriculum to maximize its effectiveness in enhancing vocabulary acquisition among non-English majors.

Teachers should incorporate Flippity into weekly lesson plans, ensuring that vocabulary practice is a regular part of the learning process. Developing subject-specific vocabulary lists that align with course content can help students learn relevant terms more effectively. Additionally, Flippity should be used as a supplementary tool for homework and self-study, with assignments that encourage independent learning, such as creating custom flashcards or completing practice quizzes.

The integration of productive skills partially contributes to the efficacy of the learning intervention, which helps learners guarantee that they have mastered the newly acquired knowledge. Lee and Muncie (2006) increase active vocabulary students through the integration of writing skills at the end of the process. Learning by sharing was implemented by Faraj (2015); participants grasped the given vocabulary and had a chance to use the word via describing pictures, acting out, and orally sharing the knowledge of the words in class. Additionally, in terms of assessment, peer testing was provided for a more effective way of raising self-awareness. Therefore, the teachers must attach several reflection tasks supporting students' self-awareness.

Furthermore, initial and ongoing training is essential to ensure effective use of Flippity. Comprehensive training sessions should cover basic usage, advanced features, and integration strategies, supported by resources like tutorial videos and user guides. Encouraging peer collaboration through regular meetings or online forums can help teachers share experiences and best practices. In the classroom, Flippity should be used daily, with customized activities tailored to meet the diverse needs of students. Teachers should utilize Flippity's analytics to monitor progress, identify struggling students, and provide targeted interventions.

Regarding spelling bee competitions, the spelling practice tool of Flippity can potentially play a crucial role in effective preparation. By using this tool, students can enhance their spelling skills, expand their vocabulary, and boost their confidence (Duckworth et al., 2011; Sekarini, 2013; Rohmawati, 2015; Yusuf et al., 2017; Mayasari, 2018).

In relation to enhancing vocabulary through the integration of listening skills, in the world of language teaching, Chinese whisper, the most entertaining meaningful learning activity, and dictation, the most common self-practice strategy in developing listening skills, could be generally comprehended as the students hear the materials and then generate to the results in written or spoken form. The effectiveness of the learning strategies, according to several research studies (Rahimi, 2008; Christ et al., 2011; Kazazoğlu, 2013; Utami, 2018; Chiang, 2019; Musa, 2019; Ndraha & Kurniawan, 2019; Fatkhul & Rahmawati, 2022; Nafisah et al., 2022; Wong & Yunus, 2023; Li et al., 2024) also aligns with the benefits of spelling practice on Flippity in terms of vocabulary enhancement.

According to Wiggins and McTighe (2005), modern classrooms often fall into the categories of "hands-on without being minds-on" and "aimlessness". The use of Flippity might be an alternative way to address these issues. By integrating Flippity into the Chinese whisper activity, the initial task and the verification task at the end of the activity pose no obstacles in terms of pronunciation. With the Quiz mode or Practice mode of spelling practice tool on the Flippity platform integrated into the dictation method, teachers can assess all students' vocabulary retention more effectively in class.

For students, engagement and motivation can be boosted through technology integration

(Nation, 2013; Sasi et al., 2017; Surkamp & Viebrock, 2018; Bates, 2019; Geschwind et al., 2020; Henriques et al., 2021; Jenks, 2023; Jiang et al., 2023). Regular spelling bee and class-wide vocabulary dictation challenges can make learning more meaningful. Prompting self-directed learning by encouraging the use of Flippity outside classroom hours can foster independence and responsibility. Students should be encouraged to provide regular feedback on their experience with Flippity, which can be used to create personalized learning paths tailored to their needs.

Acknowledgment

We greatly appreciate and recognize the guidance and academic insights our supervisor, MA provided. Tran Thi Nam Phuong is a committed lecturer at the Thai Nguyen University of Education. We also extend our thanks to the undergraduate Math teaching major students at Thai Nguyen University of Education for their support and participation.

References

Afify, M. K. (2020). Effect of interactive video length within e-learning environments on cognitive load, cognitive achievement and retention of learning. *Turkish Online Journal of Distance Education*, *21*(4), 68-89. https://doi.org/10.17718/tojde.803360

Afrin, S. (2016). Writing problems of non-English major undergraduate students in Bangladesh: An observation. *Open journal of social sciences*, *4*(3), 104-115. https://doi.org/http://dx.doi.org/10.4236/jss.2016.43016

Agca, R. K., & Özdemir, S. (2013). Foreign language vocabulary learning with mobile technologies. *Procedia-Social and Behavioral Sciences*, *83*, 781-785. https://doi.org/10.1016/j.sbspro.2013.06.147

Al-Bashayreh, M., Almajali, D., Altamimi, A., et al. (2022). An empirical investigation of reasons influencing student acceptance and rejection of mobile learning apps usage. *Sustainability*, *14*(7), 4325. https://doi.org/10.3390/su14074325

Alanezi, Y. H., & AlAzwani, N. S. (2020). Future of mobile learning during and after global (Covid-19) pandemic: college of basic education as case. *Future*, *11*(17), 12. https://doi.org/https://doi.org/10.7176/jep%2F11-17-01

Alemi, M., Sarab, M. R. A., & Lari, Z. (2012). Successful learning of academic word list via MALL: Mobile Assisted Language Learning. *International Education Studies*, *5*(6), 99-109. https://doi.org/10.5539/ies.v5n6p99

Altalhab, S. (2018). Short-and long-term effects of repetition strategies on vocabulary retention. *Advances in Language and Literary Studies*, *9*(2), 146-149. https://doi.org/10.7575/aiac.alls.v.9n.2p.146

Ardito, G. (2020). Science at my own pace. In G. Ardito (Ed.), *Curriculum, Instruction, and Assessment: Intersecting New Needs and New Approaches* (pp. 55-78). Information Age Publishing.

Ashraf, T. A. (2015). Teaching vocabulary to non-English majors: A general perspective. *DIU Journal of Humanities and Social Science*, *2*, 174-175. https://doi.org/10.36481/diujhss.v.02i1.tdcsgw42

Barreiro, A. V. S. (2022). Education 4.0 and its impact on the educational system during the pandemic and post pandemic Covid 19 in Ecuador. *Sinergias educativas*, *7*(1), 121-122. https://doi.org/10.37954/se.v7i1.332

Bates, A. W. (2019). *Teaching in a digital age: Guidelines for designing teaching and learning*. BCcampus.

Borova, T., Chekhratova, O., Marchuk, A., et al. (2021). Fostering students' responsibility and learner autonomy by using google educational tools. *Revista Romaneasca pentru Educatie Multidimensionala*, *13*(3), 73-94. https://doi.org/10.18662/rrem/13.3/441

Carvalho, P. F., Sana, F., & Yan, V. X. (2020). Self-regulated spacing in a massive open online course is related to better learning. *npj Science of Learning*, *5*(1), 2. https://doi.org/10.1038/s41539-020-0061-1

Chiang, H.-H. (2019). A Comparison between Teacher-Led and Online Text-to-Speech Dictation for Students' Vocabulary Performance. *English Language Teaching*, *12*(3), 77-93. https://doi.org/10.5539/elt.v12n3p77

Christ, T., Wang, X. C., & Chiu, M. M. (2011). Using story dictation to support young children's vocabulary development: Outcomes and process. *Early Childhood Research Quarterly*, *26*(1), 30-41. https://doi.org/10.1016/j.ecresq.2010.06.002

Christopher, T. (2022). Flippity‐Supplementary Resources for the Classroom. *崇城大学SILC紀要*, *2*, 46-54.

Chuah, P., & Lim, P. (2018). Applying quality tools to improve student retention supporting process: a case study from WOU. *Asian Association of Open Universities Journal*, *13*(1), 60-72. https://doi.org/10.1108/AAOUJ-01-2018-0003

Chung, C. E., Yasinin, N. F., Arsat, N. N., et al. (2021). A Study of Vocabulary Learning Strategies Among University Students from Non-English Majors. *Open Educational Resources*, 1-17.

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS quarterly*, *19*(2), 189-211. https://doi.org/10.2307/249688

Criollo-C, S., Guerrero-Arias, A., Jaramillo-Alcázar, Á., & Luján-Mora, S. (2021). Mobile Learning Technologies for Education: Benefits and Pending Issues. *Applied Sciences*, *11*(9), 4111. https://doi.org/10.3390/app11094111

Criollo-C, S., Lema, M., Gonzalez, M. S., et al. (2021). Exploring the technological acceptance of a mobile learning tool used in the teaching of an indigenous language. *PeerJ Computer Science*, *7*. https://doi.org/10.7717/peerj-cs.550

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, *13*(3), 319-340. https://doi.org/10.2307/249008

Deris, F., & Shukor, N. (2019). Vocabulary learning through mobile apps: A phenomenological inquiry of student acceptance and desired apps features. *International Journal of Interactive Mobile Technologies (iJIM)*, *13*(7), 129–140. https://doi.org/10.3991/ijim.v13i07.10845

Dixson, M. D. (2010). Creating effective student engagement in online courses: What do students find engaging? *Journal of the Scholarship of Teaching and Learning*, *10*(2), 1-13.

Duckworth, A. L., Kirby, T. A., Tsukayama, E., et al. (2011). Deliberate practice spells success: Why grittier competitors triumph at the National Spelling Bee. *Social psychological and personality science*, *2*(2), 174-181. https://doi.org/10.1177/1948550610385872

Ehri, L. C., & Rosenthal, J. (2007). Spellings of words: A neglected facilitator of vocabulary learning. *Journal of Literacy Research*, *39*(4), 389-409. https://doi.org/10.1080/10862960701675341

Ellis, R. (2015). *Understanding Second Language Acquisition 2nd Edition*. Oxford University Press.

Faraj, A. K. A. (2015). Effective Strategies for Turning Receptive Vocabulary into Productive Vocabulary in EFL Context. *Journal of Education and Practice*, *6*(27), 10-19.

Fatkhul, A., & Rahmawati, S. (2022). *Improving students' vocabulary through dictation method*. Undergraduate Conference on Applied Linguistics, Linguistics, and Literature,

García Botero, G., Questier, F., Cincinnato, S., et al. (2018). Acceptance and usage of mobile assisted language learning by higher education students. *Journal of Computing in Higher Education*, *30*, 426-451. https://doi.org/10.1007/s12528-018-9177-1

Georgiadou, E., & Siakas, K. V. (2006). *Distance learning: technologies; enabling learning at own place, own pace, own time*. Proceedings of the 11th International Conference on Software Process Improvement - Research into Education and Training, Southampton, UK.

Geschwind, L., Broström, A., & Larsen, K. (2020). *Technical Universities: Past, present and future*. Springer Nature.

Giyatmi, G. (2021). *Optimizing Google classroom in online learning during Covid-19 Pandemic*. The 4th International Coneference on Linguistics and Language Teaching, Depok, Indonesia.

Guay, F., Lessard, V., & Dubois, P. (2016). How can we create better learning contexts for children? Promoting students' autonomous motivation as a way to foster enhanced educational outcomes. In *Building autonomous learners: Perspectives from research and practice using self-determination theory* (pp. 83-106). Springer.

Hampel, R. (2015). *Developing online language teaching: Research-based pedagogies and reflective practices*. Springer.

Hao, T., Wang, Z., & Ardasheva, Y. (2021). Technology-assisted vocabulary learning for EFL learners: A meta-analysis. *Journal of Research on Educational Effectiveness*, *14*(3), 645-667. https://doi.org/10.1080/19345747.2021.1917028

Henriques, S., Correia, J. D., & Dias-Trindade, S. (2021). Portuguese primary and secondary education in times of covid-19 pandemic: An exploratory study on teacher training and challenges. *Education Sciences*, *11*(9), 542. https://doi.org/10.3390/educsci11090542

Hidalgo, F. J. P. (2020). TELL, CALL, and MALL: Approaches to bridge the language gap. In *International approaches to bridging the language gap* (pp. 118-134). IGI Global.

Howard, J. M., & Scott, A. (2017). Any time, any place, flexible pace: Technology-enhanced language learning in a teacher education programme. *Australian Journal of Teacher Education (Online)*, *42*(6), 51-68. https://doi.org/10.14221/ajte.2017v42n6.4

Hsueh-Chao, M. H., & Nation, P. (2000). Unknown vocabulary density and reading

comprehension. *Reading in a Foreign Language*, *13*(1), 403–430. https://nflrc.hawaii.edu/rfl/item/43

Hughes, J., Dummett, P., & Stephenson, H. (2023). *Life: A2-B1* (Vietnam 2 ed.). Cengage Learning.

Hwang, W.-Y., Huang, Y.-M., Shadiev, R., et al. (2014). Effects of using mobile devices on English listening diversity and speaking for EFL elementary students. *Australasian journal of educational technology*, *30*(5). https://doi.org/doi.org/10.14742/ajet.237

Ilgaz, H. (2019). Adult Learners' Participation in a Blended Learning Environment: A Case Study on Imposed Pace Learning. *Malaysian online journal of educational technology*, *7*(4), 15-29. https://doi.org/10.17220/mojet.2019.04.002

Jenks, C. J. (2023). *New Frontiers in Language and Technology*. Cambridge University Press.

Jiang, B., Gu, M., & Du, Y. (2023). Recent advances in intelligent textbooks for better learning. *Learning: Designing the Future*, 247-261. https://doi.org/10.1007/978-3-031-09687-7_15

Kashefian-Naeeini, S., & Kouhpeyma, Y. (2020). Fostering learner autonomy in educational settings. *International Journal of Multicultural and Multireligious Understanding*, *7*(7), 190-201. https://doi.org/10.18415/ijmmu.v7i7.1765

Kazazoğlu, S. (2013). Dictation as a language learning tool. *Procedia-Social and Behavioral Sciences*, *70*, 1338-1346. https://doi.org/10.1016/j.sbspro.2013.01.195

Khan, A. A., & Madden, J. (2016). Speed learning: maximizing student learning and engagement in a limited amount of time. *International Journal of Modern Education and Computer Science*, *8*(7), 22-30. https://doi.org/10.5815/ijmecs.2016.07.03

Kilickaya, F., & Krajka, J. (2010). Teachers' Technology Use in Vocabulary Teaching. *Online Submission*.

Klimova, B., & Polakova, P. (2020). Students' perceptions of an EFL vocabulary learning mobile application. *Education Sciences*, *10*(2), 37. https://doi.org/10.3390/educsci10020037

LaFond, L. L. (2023). A Distracted Learning Pandemic: The Aftermath of Synchronous Online Courses. *Technology-Enhanced Language Teaching and Learning: Lessons from the Covid-19 Pandemic*, 13. https://doi.org/10.5040/9781350271043.ch-002

Lan, Y.-J. (2013). The effect of technology-supported co-sharing on L2 vocabulary strategy development. *Journal of Educational Technology & Society*, *16*(4), 1-16.

Laufer, B. (1990). Ease and difficulty in vocabulary learning: Some teaching implications. *Foreign Language Annals*, *23*(2), 147-155. https://doi.org/10.1111/j.1944-9720.1990.tb00355.x

Le, T. T. K., & Tran, B. T. (2022). *Using Zalo application as a learning management system*. Proceedings of the 8th International Conference on Frontiers of Educational Technologies, Ho Chi Minh.

Lee, S. H., & Muncie, J. (2006). From receptive to productive: Improving ESL learners' use of vocabulary in a postreading composition task. *TESOL quarterly*, *40*(2), 295-320. https://doi.org/10.2307/40264524

Li, S., Hao, D., Liu, B., et al. (2021). Evaluation of eyestrain with vertical electrooculogram.

Computer Methods and Programs in Biomedicine, *208*, 106171. https://doi.org/10.2307/40264524

Li, Y., Li, Y., Zhang, M., et al. (2024). *CB-Whisper: Contextual Biasing Whisper Using Open-Vocabulary Keyword-Spotting*. Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation, Torino, Italia.

Looyestyn, J., Kernot, J., Boshoff, K., et al. (2017). Does gamification increase engagement with online programs? A systematic review. *PloS one*, *12*(3), e0173403. https://doi.org/10.1371/journal.pone.0173403

Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. *Journal of computer assisted learning*, *24*(6), 515-525. https://doi.org/10.1111/j.1365-2729.2008.00289.x

Mayasari, W. J. (2018). The use of spelling bee game to increase the students' vocabulary mastery of the seventh grade at smpn i bantan. *Inovish Journal*, *3*(2), 129-136. https://doi.org/10.35314/inovish.v3i2.828

Min, Y.-K. (2013). Vocabulary acquisition: Practical strategies for ESL students. *Journal of International students*, *3*(1), 64-69. https://doi.org/10.32674/jis.v3i1.520

Miyazoe, T., & Anderson, T. (2010). Learning outcomes and students' perceptions of online writing: Simultaneous implementation of a forum, blog, and wiki in an EFL blended learning setting. *System*, *38*(2), 185-199. https://doi.org/10.1016/j.system.2010.03.006

Mojarad, S., Essa, A., Mojarad, S., & Baker, R. S. (2018). *Data-driven learner profiling based on clustering student behaviors: learning consistency, pace and effort*. Intelligent Tutoring Systems: 14th International Conference, Montreal, QC, Canada.

Moore, M. G. (1972). Learner autonomy: The second dimension of independent learning. *Convergence*, *5*(2), 76.

Mpungose, C. B., & Khoza, S. B. (2022). Postgraduate students' experiences on the use of Moodle and Canvas learning management system. *Technology, Knowledge and Learning*, *27*(1), 1-16. https://doi.org/10.1007/s10758-020-09475-1

Musa, A. H. (2019). The Relationship between Mastering Dictation and University Students' Achievement of Spelling Vocabulary and Writing Text. *Journal of Language Studies*, *2*(2), 182-122. https://doi.org/10.25130/jls.2.2.11

Nafisah, A., Anwar, C., Hartono, H., & Permatasari, R. (2022). The Impact of Chinese Whisper Game towards EFL Young Learners Vocabulary Mastery. *Journal of Advanced Multidisciplinary Research*, *3*(2), 79-92. https://doi.org/10.30659/jamr.3.2.79-92

Naidu, S. (2008). Enabling time, pace, and place independence. In *Handbook of research on educational communications and technology* (pp. 259-268). Routledge.

Nation, I. S. P. (1990). *Teaching and Learning Vocabulary*. Newbury House Publishers.

Nation, I. S. P. (2006). How large a vocabulary is needed for reading and listening? *Canadian modern language review*, *63*(1), 59-81. https://doi.org/10.1353/cml.2006.0049

Nation, I. S. P. (2013). *Learning Vocabulary in Another Language*. Cambridge University Press.

Ndraha, V. E., & Kurniawan, M. (2019). Playing" CABE"(Searching and Whispering) to Increase Children's English Vocabulary. *Jurnal Pendidikan Usia Dini*, *13*(1), 143-157. https://doi.org/10.21009/10.21009/JPUD.131.11

Ngan, N. T. T. (2021). An investigation of vocabulary learning strategies used by non-English

majors at Hong Duc university. *Journal of Science*, *7*, 113. https://vjol.info.vn/index.php/HDU/article/view/68060

Ngo, T. C. T. (2023). EFL Students' Strategies for Learning Academic Vocabulary with Mobile Phones at Van Lang University in Vietnam. *International Journal of Language Instruction*, *2*(4), 19-42. https://doi.org/10.54855/ijli.23242

Nunan, D. (2003). *Practical English language teaching* (International ed.). McGraw-Hill.

Paine, N. (2019). *Workplace Learning: How to Build a Culture of Continuous Employee Development*. Kogan Page.

Pauk, W., & Owens, R. J. Q. (2010). *How to study in college* (10th Ed. ed.). Cengage Learning.

Pindeh, N., Suki, N. M., & Suki, N. M. (2016). User acceptance on mobile apps as an effective medium to learn Kadazandusun language. *Procedia Economics and Finance*, *37*, 372-378. https://doi.org/10.1016/S2212-5671(16)30139-3

Rahimi, M. (2008). Using dictation to improve language proficiency. *Asian EFL Journal*, *10*(1), 33-47. https://asian-efl-journal.com/March_2008_EBook.pdf

Reinders, H. (2020). Fostering autonomy: helping learners take control. *English Teaching*, *75*(2), 135-147. https://doi.org/10.15858/engtea.75.2.202006.135

Renandya, W. A., & Widodo, H. P. (2016). *English Language Teaching Today: Linking Theory and Practice*. Springer International Publishing.

Revadekar, A., Oak, S., Gadekar, A., & Bide, P. (2020). *Gauging attention of students in an e-learning environment*. 2020 IEEE 4th Conference on Information & Communication Technology, Chennai, India.

Rohmawati, A. (2015). Spelling bee in teaching vocabulary. *Journal of English and Education*, *3*(2), 1-15.

Salas‐Pilco, S. Z., Yang, Y., & Zhang, Z. (2022). Student engagement in online learning in Latin American higher education during the COVID‐19 pandemic: A systematic review. *British Journal of Educational Technology*, *53*(3), 593-619. https://doi.org/10.1111/bjet.13190

Santiana, S., Silvani, D., & Ruslan, R. (2021). Optimizing LMS CANVAS for interactive online learning perceived by the students. *Journal of English Education and Teaching*, *5*(4), 529-543. https://doi.org/10.33369/jeet.5.4.529-543

Sasi, S., Kayimbasioglu, D., Aksal, A., et al. (2017). Learning English language in peace context through technology. *Eurasia J. Math. Sci. Technol. Educ.*, *13*(6), 605-1614.

Scrivener, J. (2005). *Learning teaching* (Vol. 2). Macmillan Oxford.

Sekarini, R. (2013). *Implementing spelling bee game through three phase technique to improve the seventh graders' spelling ability* Universitas Negeri Malang.

Serag, A. (2011). Teaching English writing skills: developing learner autonomy in the Japanese context. *International Journal of Arts & Sciences*, *4*(10), 223.

Sivalingam, N. (2022). *Learning at Speed: How to Upskill and Reskill Your Workforce at Pace to Drive Business Performance*. Kogan Page.

Stickler, U., & Hampel, R. (2015). Transforming teaching: New skills for online language learning spaces. In *Developing online language teaching: Research-based pedagogies*

and reflective practices (pp. 63-77). Springer.

Stickler, U., Hampel, R., & Emke, M. (2020). A developmental framework for online language teaching skills. *Australian Journal of Applied Linguistics*, *3*(1), 133-151. https://doi.org/10.29140/ajal.v3n1.271

Sturt, M. (1921). A comparison of speed with accuracy in the learning process. *British Journal of Psychology*, *12*(3), 289. https://doi.org/10.29140/ajal.v3n1.271

Sunawan, S., Amin, Z. N., Hafina, A., & Kholili, M. (2021). *The differences of students' burnout from level of education and duration daily online learning during COVID-19 pandemics*. Proceedings of the International Conference on Industrial Engineering and Operations Management, Singapore.

Surkamp, C., & Viebrock, B. (2018). *Teaching English as a Foreign Language*. Springer.

Tetty, M. (2022). *Stimulating English Speaking Fluency for Young Learners through Gamific Flippity*. Proceedings of the 4th International Conference on Innovation in Education, Science and Culture, Medan, Indonesia.

Thanh, P. T. N., Thông, N. N., & Thảo, N. T. P. (2020). Cảm nhận của sinh viên chính quy khi trải nghiệm học trực tuyến hoàn toàn trong thời gian phòng chống dịch Covid-19. *Tạp chí Khoa học Đại học Mở Thành phố Hồ Chí Minh*, *15*(2), 22-27.

Thomas, P. Y. (2011). Cloud computing: A potential paradigm for practising the scholarship of teaching and learning. *The electronic library*, *29*(2), 214-224. https://doi.org/10.1108/02640471111125177

Trang, T. T. T. (2021). How can learners study at their own pace and improve their autonomy? *International Journal of Innovation and Applied Studies*, *33*(4), 618-624.

Trčková, K., Maršálek, R., & Polášková, S. (2022). *Virtual Didactic Game in Teaching Chemistry*. EDULEARN22 Proceedings, Palma, Spain.

Trinh, N. B., & Pham, D. T. T. (2021). Challenges in speaking classrooms among non-English majors. *Vietnam journal of education*, *5*(2), 37-42. https://doi.org/10.52296/vje.2021.52

Tullis, J. G., & Benjamin, A. S. (2011). On the effectiveness of self-paced learning. *Journal of memory and language*, *64*(2), 109-118. https://doi.org/10.1016/j.jml.2010.11.002

Ur, P. (2012). *A Course in English Language Teaching*. Cambridge University Press.

Utami, P. (2018). *The Influence Of Using Chinese Whisper Game Towards Students' speaking Ability At The First Semester Of The Eighth Grade In Smp Negeri 1 Tanjungsari South Lampung 2017/2018 Academic Year* State Islamic University.

Vo, T., Truong, D., & Nguyen, P. (2023). *The impact of digital technology on content and language integrated learning in higher education: a systematic review of literature*. ICTE Conference Proceedings, Ho Chi Minh, Vietnam.

Wang, A. Y. (1983). Individual differences in learning speed. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *9*(2), 300. https://doi.org//10.1037/0278-7393.9.2.300

Wang, D. (2021). *Strategies for Non-English majors in china to improve their English vocabulary* University of Wisconsin-Platteville

Webb, S., & Macalister, J. (2013). Is text written for children useful for L2 extensive reading? *TESOL quarterly*, *47*(2), 300-322. https://doi.org/10.1002/tesq.70

Wiggins, G., & McTighe, J. (2005). Backward Design. In *Understanding by design* (pp. 13-34). Ascd.

Wong, C. H. T., & Yunus, M. M. (2023). Let" Flippity" Speak: Using Online Board Game to Improve Speaking Skills Among Elementary Pupils. *European Journal of Educational Research*, *12*(2), 1085-1096. https://doi.org/10.12973/eu-jer.12.2.1085

Yaman, İ., & Ekmekçi, E. (2016). A shift from CALL to MALL? *Participatory Educational Research*, *4*(2), 25-32.

Yan, S. (2011). *A study on English vocabulary strategies used by non-English majors* University of Wisconsin-Platteville.

Yannier, N., Hudson, S. E., Koedinger, K. R., et al. (2021). Active learning:"Hands-on" meets "minds-on". *Science*, *374*(6563), 26-30. https://doi.org/10.1126/science.abj9957

Yen, T., Khue, N., & Trang, N. (2023). Using the Jigsaw Technique to Improve English Speaking Skills for Freshmen. *International Journal of Research and Review*, *10*(5), 367-382. https://doi.org/10.52403/ijrr.20230544

Yu, K., Tan, L., Mumtaz, S., et al. (2021). Securing critical infrastructures: deep-learning-based threat detection in IIoT. *IEEE Communications Magazine*, *59*(10), 76-82. https://doi.org/10.1109/MCOM.101.2001126

Yusuf, Y. Q., Mustafa, F., & Alqinda, M. (2017). *The use of spelling bee game in teaching vocabulary to junior high school students*. Proceedings of The 1st National Conference on Teachers' Professional Development, Syiah Kuala University, Banda Aceh, Indonesia.

Zhi-Liang, L. (2010). A Study on English Vocabulary Learning Strategies for Non-English Majors in Independent College/Etude Sur Les Stratégies De L'apprentissage De Vocabulaire Anglais Pour Les Étudiants Qui Ne Sont Pas Dans La Spécialité De La Langue Anglaise Dans Les Universités Indépendantes. *Cross-cultural communication*, *6*(4), 152.

Zhu, J., Yuan, H., Zhang, Q., et al. (2022). The impact of short videos on student performance in an online-flipped college engineering course. *Humanities and Social Sciences Communications*, *9*(1), 1-10. https://doi.org/10.1057/s41599-022-01355-6

Biodata

Nguyen Nam Khanh, currently an undergraduate student majoring in English Teaching. Since 2021, he has worked as a private teacher, and I have found that I am partially adept at teaching reading, listening, and speaking skills in English for teenagers, despite being an undergraduate. My research interests span technology integration, teacher well-being, social justice education, and professional development for English teachers.

Tran Nam Phuong holds the position of Lecturer at Thai Nguyen University of Education in Vietnam. Her expertise lies in teaching listening skills. Her research interests revolve around teaching methodology and gamification. With four years of experience, she is committed to enhancing education and fostering innovative learning approaches.

Tran Thi Thu Hoai - a student at Thai Nguyen University of Education in Viet Nam. With a passion for education, she specializes in teaching reading skills. Alongside her studies, she actively engages in research, particularly focusing on teaching methodology. She aspires to contribute to the field of education with innovative approaches to teaching and learning.