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# EFL University Students' Perception of Using Smartphone in **Learning Vocabulary**



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#### ABSTRACT

The purpose of this research is to discuss students' perceptions of the use of smartphone in learning new English vocabulary. An online questionnaire was used to obtain data from 34 of Indonesian EFL University students. The items of the questionnaire cover several aspects of vocabulary, including dictionary use, morphological analysis, and contextual analysis. Descriptive statistics of Likert-based questions were conducted to analyse the data. The findings of this study indicate that students perceive smartphone as facilitating several learning actions, such as contributing greatly to the acquisition of new English vocabulary, remembering, writing, and pronouncing words correctly. Apart from that, students also use smartphones because they are effective, especially in looking for synonyms and antonyms of words, thus really helping in the learning process. The findings of this study contribute to existing research on students' perceptions of the use of mobile applications for learning purposes, particularly in vocabulary learning.

**Keywords:** Students' perception, smartphone, learning vocabulary

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#### INTRODUCTION

Current technological advances have caused changes in every field of human activity, including education (Ishak et al., 2022; Jafar et al., 2020; Filiz & Benzet, 2018). In line with this, to increase its role in conveying knowledge, all educational pathways always adapt to technological advances (Cevikbas & Kaiser, 2023; Lukas & Yunus, 2021). This also aims to reduce the limitations of learning in the classroom (Valerjevna et al., 2020; Thamrin et al., 2019) and prepare students to face the challenges of this digital era (Lukas & Yunus, 2021).

Language learning is strongly supported by the use of technology. The use of mobile devices, which have an important role in the teaching and learning process (Rinanda et al., 2019), has become indispensable for students in learning foreign languages, including English (Alrefaai, 2019; Ummu et al., 2018). The development of mobile devices for examples smartphones, iPad, and laptops, make it easier for students to learn languages without carrying heavy books or having to be in the classroom (Guo et al., 2020). With various tempting conveniences such as speed of connectivity, adequate screen size, advanced audio and features of modern mobile technology, smartphones and other mobile devices are causing a paradigm shift in language education (Metruk, 2020; Pratama & Roza, 2024). Currently, the trend of students is changing from using traditional to mobile or smartphones (Wang Hongmei, 2021; Alhamad et al., 2021).

Nowadays, mobile technology has created a huge impact on language learning by providing a fast way of transferring knowledge without being limited by time and place. (Nami, 2020). Thus, mobile learning can effectively engage students in learning activities, increase understanding, and enrich learning material references (Siregar et al., 2020; Shehadeh,





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2024). Providing a number of advanced devices and benefits to their users, mobile technology is well suited for widespread use in universities. Researchers have shown that smartphone technology has the potential to give students new opportunities for learning (Lekawael, 2017). In the beginning, smartphones combined the features of a cell phone with a personal digital assistant (PDA). The most recent models include a high-resolution touch screen, a web browser that shows ordinary web pages, and capability for portable media players (Wu, 2014).

A number of studies have been conducted by experts related to the effectiveness of learning via smartphone, for example Wardak, (2020), Perera and Hervás-Gómez, (2021), (Uppal et al., (2020), Kassim & Said, (2020), Imam, (2020) and Shehadeh, (2024). The results of their research are mixed. However, based on the research results of Heil et al. (2016), most mobile applications focus on vocabulary acquisition. They found that 84 percent of commercial language learning apps focused on practicing vocabulary, while 53 percent learned vocabulary through context, which serves to increase students' vocabulary knowledge through repetition of new vocabulary. Therefore, smartphones seem to have a great influence on the learning process and have a huge impact on educational practices in the world. Questions that may arise are how smartphones can be used in the educational process, and what are the students' attitude towards these smartphone devices. This study attempts to investigate the perception of Indonesian EFL university students toward the use of smartphone in the context of learning vocabulary.

Numerous studies have been done on the usefulness of smartphone apps for language learning, particularly vocabulary acquisition. For example, Mahdi, (2018) carried out a meta-analysis study to determine how well mobile device instructional materials work for vocabulary acquisition. He discovered that practically every component of vocabulary learning was moderately impacted by mobile devices. The effects of smartphone use on EFL vocabulary were investigated by Han & Gurluyer, (2017). According to the study, using a smartphone can facilitate the acquisition of L2 vocabulary. In particular, Ajisoko, (2020) investigated how university students could enhance their vocabulary by using the Duolingo app. The study's findings showed that as learners' post-test scores were significant, their vocabulary had improved. In the Malaysian context, Annamalai & Kumar, (2020) investigated into the use of the WhatsApp group as a platform for learning extension in a blended learning classroom with a small group of undergraduate students. The majority of students indicated in their reflections that, despite their difficulties, they preferred WhatsApp.

From the review the study discussed, it can be concluded that smartphone learning in relation to vocabulary learning plays an important role in developing students' English vocabulary. Most studies show the importance of smartphones in supporting students' vocabulary acquisition. Therefore, understanding students' perceptions about smartphone use is very important for English educators to pay attention to and be aware of when teaching English, especially vocabulary.

## **METHOD**

This research involved 34 Indonesian EFL university students. An online questionnaire was used to gather data for this investigation. The questionnaire were taken and adapted from Al-Sofi, (2020), which explore students' perceptions of the effectiveness of using smartphone in enhancing vocabulary acquisition. In order to accomplish the goal of this study, the items of the questionnaire were carefully developed with clarity in mind. It begins with an introductory paragraph that introduces the purpose of the study, confidentiality of respondents' identities, and an explanation of how to respond to the items. A Likert-type scale consisting of five items was used with scores ranging from strongly agree (5), indicating a very positive perception, to strongly disagree (1), indicating a very negative perception. The questionnaire consisted of only one section exploring participants' perceptions of the potential role of smartphone applications in their vocabulary acquisition (17 items). Vocabulary is a very diverse term that covers various aspects. Therefore, the items in this questionnaire cover several aspects of vocabulary, including dictionary use (spelling, unknown words, word





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classes), morphological analysis (i.e. studying the meaning of words by analysing the parts and formation of word components, collocation, synonyms, or antonyms), and contextual analysis (i.e., learning the meaning of words with reference to the learning context and guessing depending on contextual clues). Furthermore, to analyse the data for this study, descriptive statistics of Likert-based questions were conducted.

#### FINDINGS AND DISCUSSION

The findings of the questionnaire distributed via Google Form are presented in Table 1 below. Filled by 34 students. All students are accustomed to using smartphones for educational purposes including learning vocabulary. Their answers to the statements are presented as percentages. The responses 'agree' and 'strongly agree' were considered by students to positively assess the learning statements proposed in the questionnaire items. While the answers 'strongly disagree' and 'disagree' are interpreted as students assessing the statement negatively.

	Table 1 Students' Perception	n on the ı	ise of sm	artphone	in learn	ing gramı	mar
No	Statements	SA	A	U	D	SD	Mean
1.	The advent of smartphones has greatly contributed to acquiring my new English vocabulary	32,35%	50%	8,82%	2,94%	8,82%	3,79
2.	Smartphones help me to learn the meaning of new English vocabulary words.			-	2,94%	8,82%	3,94
3.	understand the meaning of new English expressions.		41,17%		8,82%	5,88%	3,97
4.	I can identify the meaning of the new English vocabulary through the context using a smartphone.		32,35%	8,82%	2,94%	11,76%	3,79
5.	I can identify the exact meaning of the new vocabulary using a smartphone	32,35%	44,11%	5,88%	8,82%	8,82%	3,67
6.	Smartphones help me remember the meaning of the vocabulary I have acquired later on.	23,52%	41,17%	20,58%	8,82%	5,88%	3,55
7.	I can use this new vocabulary later in my daily life using a smartphone	20,58%	23,52%	8,82%	5,88%	5,88%	3,67
8.	Smartphone helps me to write the English vocabulary correctly.	38,23%	38,23%	8,82%	5,88%	2,94%	3,97
9.	Smartphone helps me to remember the correct pronunciation of the new English vocabulary.	41,17%	35,29%		2,94%	5,88%	3,97
10.	I can reinforce the existing English vocabulary using a smartphone	23,52%	44,11%	14,70%	2,94%	8,82%	3,64





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11.	Smartphone helps me to link	32,35%	35,29%	11,76%	5,88%	8,82%	3,67		
	the new vocabulary to their								
	meanings in the English								
	language.								
12.	I can easily identify the word	26,47%	44,11%	17,64%	2,94%	5,88%	3,70		
	class of the new English								
	vocabulary using a smartphone								
13.	Smartphone helps me to know	35,29%	44,11%	8,82%	2,94%	5,88%	3,88		
	the collocation of the new								
	English vocabulary.								
14.	Smartphone helps me to	44,11%	38,23%	5,88%	2,94%	5,88%	4,0		
	connect the new vocabulary to								
	their synonyms.								
15.	I can easily connect the new	32,35%	44,11%	8,82%	5,88%	5,88%	3,79		
	vocabulary to their antonyms								
	using a smartphone								
16.	I can keep a vocabulary	32,35%	41,17%	14,70%	5,88%	2,94%	3,82		
	notebook using a smartphone								
17.	Smartphone helps me to ask	38,23%	35,29%	14,70%	5,88%	2,94%	3,88		
	other people (friends, mates)								
	about the meaning of the new								
	vocabulary.								
	•								

Table above shows that the items with the highest rates agreement were items 14 (mean 4.0). It indicates that students believe that using smartphone will help them to connect new vocabulary to their synonyms. This is followed by items 3, 8, 9, and 2 (mean 3.97 and 3.94) which shows that students believe that through smartphones they can understand the meaning of new English expressions, write and pronounce words correctly. In this regard, Al-Sofi, (2020) noted that mobile dictionary (which can be download via smartphone) equipped with audio file British and American accents greatly helping students hear and imitate pronunciation. Apart from that, they can also find unknown words, look for their contextual meaning or use the dictionary to identify the meaning, check the pronunciation, and listen to the sounds in conventional English.

Furthermore, Huwari et al., (2023) also reported that the majority of students believe that using smartphones helps them improve their vocabulary when searching for the meaning, spelling, pronunciation of words, listening to English videos via YouTube, English channels and English music, and using social media. The findings of other research also show that most students use smartphone applications to find new words and sentences related to their meaning and pronunciation (Abdullah et al., 2019; Palangngan, 2022; Maming et al., 2023).

The next item was items 13, 17, and 16 (mean 3.88 and 3.82) which shows that smartphones can help students find out new English vocabulary collocations. They also believe that smartphones can help them ask others about the meaning of new vocabulary, and store new vocabulary. Furthermore, students also believe that they can keep a vocabulary notebook using smartphone. According to Shehadeh, (2024), one of the main uses of smartphone for educational purposes is learning vocabulary. Vocabulary has been one of the main topics of CALL research studies over the last two decades. For example, (Nguyen Nguyen, 2021) reviewed on media of foreign language vocabulary acquisition. He found a significant positive impact of using this tool on vocabulary acquisition. Zhang and Pérez-Paredes, (2021) conducted a study on EFL graduate students and found that the use of smartphones can enhance vocabulary acquisition. Furthermore, they discovered that students regarded vocabulary learning applications and smartphone dictionaries as their favourite smartphone applications. Moreover, Hojatpanah and Dashtestani, 2020) discovered that





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instructors and students felt favourably about utilizing electronic dictionaries to acquire vocabulary. A study done by Kayra, (2024) investigated how users perceive and use a mobile application for learning vocabulary in English at a private university in Turkey. A survey, conducted among undergraduate students from various disciplines, was created and data was collected from it. The results confirmed that students can easily acquire vocabulary flexibly and effectively with the help of mobile applications. Apps for mobile devices are perfect for combining gamification elements and important pronunciation aids. This shows how interesting and effective learning can be achieved with interactive elements with audio-visual effects.

Item 1, 4, and 15 (mean 3.79 respectively) were also give considerable attention from students. This proves that they believe that smartphones make a big contribution to the acquisition of new English vocabulary. Additionally, students also believe that smartphones really help them in identifying English vocabulary through context. Furthermore, they also believe that they can easily connect new vocabulary easily by using a smartphone. These findings are also in line with several previous findings of experts who focused on the use of smartphones in vocabulary learning, for example Katemba, (2021) found that the use of MALL or CALL increased students' vocabulary and helped them improve their vocabulary. (Metruk, 2021) examined how Slovak language learners perceived the use of smartphone English language learning applications (SELLAs) for language practice and learning. The findings demonstrated the spectrum of participant sentiments toward SELLA, from favourable to neutral. The advantages of employing SELLA in language acquisition were perceived differently by the participants. But the majority of students said that they use smartphone apps to hone and expand their vocabulary.

Item 12 (3,70) which indicates that the students believe that they can easily identify the word class of the new English vocabulary using smartphone. This is followed by item 5, 7, and 11 (mean 3.67 respectively). These items identify that students believe that using smartphone can help them determine the exact new English vocabulary. Along with that, they also believe that smartphone really helps them in using new English vocabulary in their daily life. In this regard, Putra, (2023), noted that learning vocabulary is a crucial part of learning a second or foreign language. Learning the four language skills of reading, listening, speaking, and writing is largely dependent on this. Thus, it is important to use a variety of interactive media while teaching and learning vocabulary to attract students' attention. In line with this, a research conducted by Hadijah et al., (2020) stated targeted vocabulary learning leads to increased word knowledge. This study found that one way to learn vocabulary is with repeated exposure. In this context, if students often learn vocabulary via smartphone, they will get used to using it in everyday life. The item that the lowest agreement was items 6 and 10 (mean 3.55 and 3.64) that relate to remember the meaning the vocabulary that the students acquire later on, and strengthen existing vocabulary using smartphone.

#### **CONCLUSIONS**

The findings of this study indicate that students perceive mobile applications as facilitating several learning actions, such as contributing greatly to the acquisition of new English vocabulary. They also believe that using smartphones helps them remember, write and pronounce words correctly. Apart from that, students also use smartphones because they are effective in finding synonyms and antonyms of words, thus helping them with all their needs. The findings of this study contribute to existing research on students' perceptions of the use of mobile applications for learning purposes, particularly in vocabulary learning. However, further research studies need to be conducted regarding students' perceptions of mobile application use to find out what other aspects can improve their learning.

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- Abdullah, N. A. C., Tajuddin, A. J. A., & Soon, G. Y. (2019). Mandarin students' perceptions of smartphone applications in Mandarin learning. *Universal Journal of Educational Research*, 7(A9), 61–70. https://doi.org/10.13189/ujer.2019.071608
- Ajisoko, P. (2020). The use of duolingo apps to improve English vocabulary learning. *International Journal of Emerging Technologies in Learning*, 15(7), 149–155. https://doi.org/10.3991/IJET.V15I07.13229
- Al-Sofi, B. B. M. A. (2020). Students' Perceptions of the Effectiveness of Using Smartphone Applications in Enhancing Vocabulary Acquisition. *International Journal of English Linguistics*, 11(1), 110. https://doi.org/10.5539/ijel.v11n1p110

  Alhamad, A. Q. M., Akour, I., Alshurideh, M., Al-Hamad, A. Q., Kurdi, B. Al, & Alzoubi, H. (2021). Predicting the intention to use google glass: A comparative approach using machine learning models and PLS-SEM. *International Journal of Data and Network Science*, 5(3), 311–320. https://doi.org/10.5267/j.ijdns.2021.6.002
- Alrefaai, I. (2019). Exploring EFL Graduate Students' Attitudes toward, and Use of, Mobile Phones in Language Learning. *Arab World English Journal*, 1, 70–84. https://doi.org/10.24093/awej/efl1.6
- Annamalai, N., & Kumar, J. A. (2020). Understanding Smartphone use Behavior among Distance Education Students in Completing their Coursework in English: A Mixed-Method Approach. *Reference Librarian*, 61(3–4), 199–215. https://doi.org/10.1080/02763877.2020.1815630
- Cevikbas, M., & Kaiser, G. (2023). Can flipped classroom pedagogy offer promising perspectives for mathematics education on pandemic-related issues? A systematic literature review. *ZDM Mathematics Education*, *55*(1), 177–191. https://doi.org/10.1007/s11858-022-01388-w
- Filiz, S., & Benzet, A. (2018). A Content Analysis of the Studies on the Use of Flipped Classrooms in Foreign Language Education. *World Journal of Education*, 8(4), 72. https://doi.org/10.5430/wje.v8n4p72
- Guo, J., Huang, F., Lou, Y., & Chen, S. (2020). Students' perceptions of using mobile technologies in informal English learning during the COVID-19 epidemic: A study in Chinese rural secondary schools. *Journal of Pedagogical Research*, 4(4), 475–483. https://doi.org/10.33902/JPR.2020063786
- Hadijah, H., Pratolo, B. W., & Rondiyah, R. (2020). Interactive game "Kahoot!" as the media of students' vocabulary assessment. *Journal on English as a Foreign Language*, 10(1), 87–105. https://doi.org/10.23971/jefl.v10i1.1670
- Han, T., & Gurluyer, M. (2017). İlköğretim düzeyindeki EFL üniversitesi öğrencilerinin EFL kelime öğreniminde akıllı telefon kullanımına ilişkin algılarının incelenmesi. *Eefdergi*, 19(2), 19–36.
- Hojatpanah, S., & Dashtestani, R. (2020). Electronic dictionaries as language learning tools for Iranian junior high school students. *Call-Ej*, 21(1), 79–96.
- Huwari, I. F., Darawsheh, S. R., Al-Shaar, A. S., & Alshurideh, H. (2023). The Effectiveness of Mobile Phones Applications in Learning English Vocabularies. In *Studies in Computational Intelligence* (Vol. 1056, Issue February 2023). Springer International Publishing. https://doi.org/10.1007/978-3-031-12382-5\_25
- Imam, H. T. (2020). European Journal of Education Studies effectiveness of smartphone on eff reading: learners ' perception in asian countries. December, 675–714. https://doi.org/10.46827/ejes.v7i12.3484
- Ishak, N., Din, R., & Othman, N. (2022). Teachers' Perceptions and Challenges to the Use of Technology in Teaching and Learning during Covid-19 in Malaysia. *International Journal of Learning, Teaching and Educational Research*, 21(5), 281–308. https://doi.org/10.26803/ijlter.21.5.15
- Jafar, A. F., Rusli, R., Dinar, M., Irwan, I., & Hastuty, H. (2020). The Effectiveness of Video-





- EFL University Students' Perception of Using Smartphone in Learning Vocabulary
  - Assisted Flipped Classroom Learning Model Implementation in Integral Calculus. *Journal of Applied Science, Engineering, Technology, and Education*, 2(1), 97–103. https://doi.org/10.35877/454ri.asci2144
  - Kassim, H. M., & Said, N.-E. M. (2020). The integration of mobile learning among esl teachers to enhance vocabulary learning. *Education and Social Sciences Review*, 1(2), 28. https://doi.org/10.29210/07essr55400
  - Katemba, C. V. (2021). Enhancing Vocabulary Performance Through Mobile Assisted Language Learning at a Rural School in Indonesia. *Acuity: Journal of English Language Pedagogy, Literature and Culture, 6*(1), 1–11. https://doi.org/10.35974/acuity.v6i1.2457
  - Kayra, Z. (2024). Enhancing English Vocabulary Learning through Mobile Apps: A New Paradigm in Educational Technology. *Research Studies in English Language Teaching and Learning*, 2(2), 87–95. https://doi.org/10.62583/rseltl.v2i2.41
  - Lekawael, R. F. J. (2017). the Impact of Smartphone and Internet Usage on English Language Learning. *English Review: Journal of English Education*, 5(2), 255–262. https://doi.org/10.25134/erjee.v5i2.540
  - Lukas, B. A., & Yunus, M. M. (2021). ESL teachers' challenges in implementing e-learning during COVID-19. *International Journal of Learning, Teaching and Educational Research*, 20(2), 330–348. https://doi.org/10.26803/IJLTER.20.2.18
  - Mahdi, H. S. (2018). Effectiveness of Mobile Devices on Vocabulary Learning: A Meta-Analysis. *Journal of Educational Computing Research*, 56(1), 134–154. https://doi.org/10.1177/0735633117698826
  - Maming, K., Sudarmanto, & Mimi Kartika. (2023). The Students' Perception Toward the Use of Smartphones in Learning English at MAN Sidenreng Rappang. *Ethical Lingua: Journal of Language Teaching and Literature*, 10(2), 237–250. https://doi.org/10.30605/25409190.631
  - Metruk, R. (2020). EFL learners' perspectives on the use of smartphones in higher education settings in Slovakia. *Electronic Journal of E-Learning*, 18(6), 537–549. https://doi.org/10.34190/JEL.18.6.006
  - Metruk, R. (2021). The use of smartphone english language learning apps in the process of learning english: Slovak efl students' perspectives. *Sustainability (Switzerland)*, 13(15). https://doi.org/10.3390/su13158205
  - Nami, F. (2020). Educational smartphone apps for language learning in higher education: Students' choices and perceptions. *Australasian Journal of Educational Technology*, 36(4), 82–95. https://doi.org/10.14742/ajet.5350
  - Nguyen Nguyen, T. T. (2021). A review of the effects of media on foreign language vocabulary acquisition. *International Journal of TESOL & Education*, 1(1), 30–37. https://i-jte.org/index.php/journal/article/view/5
  - Palangngan, S. T. (2022). The Implementation of Hello English Smartphone Application in Enhancing Students' Vocabulary Mastery. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature,* 10(1), 415–423. https://doi.org/10.24256/ideas.v10i1.2741
  - Perera, V. H., & Hervás-Gómez, C. (2021). University students' perceptions toward the use of an online student response system in game-based learning experiences with mobile technology. *European Journal of Educational Research*, 10(2), 1009–1022. https://doi.org/10.12973/EU-JER.10.2.1009
  - Pratama, J. L., & Roza, V. (2024). Students 'Perceptions of Using Smartphone in Learning English at The Twelfth Grade of SMKS Pembina Bangsa Bukittinggi. 8, 13707–13713.
  - Putra, R. W. P. (2023). Improving Students' Vocabulary Through Paper-Mode Quizizz: A Classroom Action Research in Indonesian EFL setting. *English Learning Innovation*, 4(1), 22–31. https://doi.org/10.22219/englie.v4i1.24832





- EFL University Students' Perception of Using Smartphone in Learning Vocabulary
  - Rinanda, D., Suparno, S., & Tarjana, S. S. (2019). Students' Perceptions towards Using Mobile Application in Learning Speaking. *ELS Journal on Interdisciplinary Studies in Humanities*, 2(4), 499–514. https://doi.org/10.34050/els-jish.v2i4.8232
  - Shehadeh, A. (2024). Using Smartphones for Vocabulary Improvement: Insights from College Students' Reflections. *International Journal of Instruction*, 9(1), 157–168. https://doi.org/10.29333/aje.2024.9111a
  - Siregar, S. D., Sari, S. M., & Simamora, D. F. (2020). Using Application Based on Smartphone Android "Hello English" To Increase Students' English Competency. *English Journal for Teaching and Learning*, 08(01), 47–56. http://jurnal.iainpadangsidimpuan.ac.id/index.php/EEJ
  - Thamrin, N. S., Suriaman, A., & Maghfirah, M. (2019). Students' Perception on the Implementation of Moodle Web-Based in Learning Grammar. In *IJOLTL: Indonesian Journal of Language Teaching and Linguistics* (Vol. 4, Issue 1, pp. 1–10). https://doi.org/10.30957/ijoltl.v4i1.552
  - Ummu, W., Wan, A., Shah, P. M., & Mohamad, M. (2018). Perception on the Usage of Mobile Assisted Language Learning (MALL) in English as a Second Language (ESL) Learning among Vocational College Students. 84–98. https://doi.org/10.4236/ce.2018.91008
  - Uppal, M. A., Ali, S., Zahid, Z., & Basir, M. (2020). Factors Determining Student's Perception Towards Mobile Learning: An Empirical Study of Pakistan's Higher Education. ... Distance And Online Learning, Ii, 101–124. https://pjdol.aiou.edu.pk/wp-content/uploads/2020/01/6-factors-determining-studentss-1.pdf
  - Valerjevna, K. N., Paul, V., Pavlovna, V. N., Anatoljevich, B. A., Aleksandrovna, V. E., & Aleksandrovna, B. A. (2020). *Inverted Classroom as Innovative International Educational Technology in Teaching Doctors in Global Challenges Era.* 131(Nsrbcped 2019), 755–760. https://doi.org/10.2991/aebmr.k.200324.139
  - WANG Hongmei. (2021). Application of Smart-Phone Apps by Chinese College Students in Learning English. *Sino-US English Teaching*, 18(5), 116–120. https://doi.org/10.17265/1539-8072/2021.05.004
  - Wardak, M. (2020). Mobile assisted language learning (MALL): Teacher uses of smartphone applications (apps) to support undergraduate students 'English as a Foreign Language (EFL) vocabulary development Masuda Wardak Thesis submitted for the degree of Doctor of Philos. *Desertation, November*.
  - Wu, Q. (2014). Learning ESL Vocabulary with Smartphones. *Procedia Social and Behavioral Sciences*, 143, 302–307. https://doi.org/10.1016/j.sbspro.2014.07.409
  - Zhang, D., & Pérez-Paredes, P. (2021). Chinese postgraduate EFL learners' self-directed use of mobile English learning resources. *Computer Assisted Language Learning*, 34(8), 1128–1153. https://doi.org/10.1080/09588221.2019.1662455



