

Use of digital tools in learning listening: A survey of EFL students at the National University of Battambang, Cambodia

Navin Chhong¹, Voithna Nhean², Phouert Phal³, Dalin Leng⁴, Reaksa Sam⁵

^{1, 2, 3, 4, 5} National University of Battambang (NUBB), Battambang, Cambodia

Article info

Article history

Received: July 14, 2024

Revised: April 05, 2025

Accepted: May 07, 2025

Keywords

Digital technology

English language learning

Listening skills

Mobile applications

Student engagement

Article type

Research article

Abstract

The widespread adoption of digital tools today has fundamentally transformed many facets of education. As such, the purpose of this research is to investigate how the utilization of digital technology could assist students in developing their listening skills. To achieve this, the authors evaluate the efficacy of several digital tools, including podcasts, video tutorials, and mobile applications, to promote active comprehension and listening by reviewing the content that has already been released. This study employs the quantitative approach, and specifically, the quantitative data obtained from surveys of students who are now in their third and fourth years of study, studying English literature at the National University of Battambang (NUBB). In this context, the students took part in a wide range of listening situations that were based on digital tools. As a result, according to the findings, the students' attention and engagement increased, and they also demonstrated a significant improvement in their listening abilities, which they observed in themselves. Moreover, by conducting this study, the types of digital tools that the students utilized, such as computers and mobile phones, as well as applications and social media, were improved. However, the study demonstrated several difficulties the students encountered when utilizing digital technologies. However, the implementation of digital technologies in educational settings could lead to learning experiences that were both more effective and more enjoyable, which may be of greater benefit to both educators and students. Finally, researchers are encouraged to explore how different types of digital tools impact various language skills across diverse educational contexts and student proficiency levels.

This is an open-access article under the [CC BY-SA](#) license.



Corresponding author

Phouert Phal

National University of Battambang (NUBB), Battambang, Cambodia

Email: phalphouert2002@gmail.com

1. Introduction

Technology has been used a lot more since the end of the 20th century, especially in this 21st century, when it has spread throughout the world and completely changed our way of life (Henseler et al., 2016). Consequently, technology has become an essential part of our lives because it teaches us how the modern world works and how to adapt to the exciting and new society that we live in. This is especially evident in schools, where a lot of young and adult learners, especially students, are more knowledgeable about technology nowadays (Haleem et

al., 2022). As a result, technology is widely used and included in the educational system (Szymkowiak et al., 2021).

About language learning, there are four important skills in learning English as a foreign language: listening, speaking, reading, and writing. Among these, listening is considered the most important skill in learning English. Indeed, good listening skills are necessary for understanding content. Over time, the way that listening is taught in schools has improved and changed, especially with the use of media and educational tools. Furthermore, the listening resources that are used in classrooms come in many different forms. Nevertheless, most students find it difficult to remember what they hear and learn. Therefore, we need to be more creative and interested in using digital tools as we learn listening skills (Whalley et al., 2021).

Technology and digital tools are closely connected with studying, as they help make learning more enjoyable and engaging. In particular, listening skills can be developed in various ways, including through the use of digital tools, where teachers utilize technology to teach specific subjects. Moreover, these tools are simple and convenient to use, especially since today's students are increasingly proficient with technology, which also enables them to explore diverse learning styles (Venkatesh, Thong, & Xu, 2012). As a result, the use of technology can enhance students' success and productivity. Indeed, digital tools can boost students' productivity and achievement both inside and outside the classroom (Parmin et al., 2021).

Furthermore, technology and digital tools are now integrated into the teaching and learning process by both teachers and students (Nunes et al., 2024). In addition, technology-based media have influenced new learning styles by making information more accessible and easier to produce (Paszke et al., 2019). Specifically, the use of digital tools in listening classes is beneficial because it simplifies and reduces the time required for students to prepare, learn, and review lessons (Han, 2015). Additionally, technology-based listening lessons help students make connections and deepen their understanding of prior knowledge (Gong et al., 2023).

This study will focus on survey responses from third- and fourth-year English literature students at NUBB. However, the study may be limited by the sample size, as a small sample might not accurately represent the broader population of learners, which could affect the generalizability of the findings. There is also a possibility that bias may occur in participant selection or data analysis. Nevertheless, various sources will be used as references to support the study and strengthen its validity.

When conducting the study, researchers must consider criteria such as sample size and coverage, time, budget, and personal constraints, as well as the specific aspects and issues being investigated. Furthermore, excluding certain methods or theoretical frameworks may influence the research outcomes within the study period.

The following are the research questions for this study:

1. To what extent do students believe that digital tools enhance their ability to comprehend spoken language effectively, and how do they evaluate their improvement in listening comprehension after using these tools?
2. How frequently do students use digital tools for improving their listening skills compared to other language learning activities, and which digital tools do they find most effective?

3. Do students prefer digital tools to traditional methods for learning listening skills, and how do they compare the effectiveness of digital tools to traditional methods in improving their listening abilities?

2. Literature review

The topic of debate in the context of the application of digital tools in listening training is the utilization of technology in the process of learning how to listen effectively. The following is a list of potential matters that could be discussed concerning this issue.

2.1. Types of digital tools

There are various digital tools available that can help in learning listening skills, such as podcasts, audiobooks, online courses, and virtual reality simulations. Audiobooks and podcast platforms, such as websites and apps like SoundCloud, Audacity, and Anchor, allow learners to create, share, and listen to audio recordings. Currently, podcasts are listened to not only for entertainment but also for educational purposes, one of which is to improve students' listening skills (Sabrila & Apoko, 2022). For online courses, students can use platforms like Coursera, edX, and Udemy to offer a range of online courses in various languages that include listening exercises and activities (Ayo, 2023). Moreover, VR and AR tools like ImmerseMe and EngageVR provide immersive language learning experiences that allow learners to practice listening skills in a virtual environment (see Heng et al., 2023; Sim & Em, 2023).

2.2. Advantages of digital tools

Digital tools offer several benefits for learning listening skills, including convenience, accessibility, and the ability to provide immediate feedback. With the use of digital tools, students can practice listening at their own pace and convenience without having to stay in a classroom or needing a teacher. It is a well-known fact that practically every student has at least one mobile device, as it has become a very convenient tool to get information (Em et al., 2024). Burns (2011) noted that learning will usually take place outside the classroom, specifically in students' homes, cars, or on personal MP3 players while they travel from one location to another. Online digital learning allows students to access educational content and resources from anywhere, at any time. This feature makes education more accessible to balance personal, professional, and academic life. Digital tools offer interactive exercises, quizzes, and games that make learning listening skills more engaging and fun. This helps learners retain information better and develop a more profound understanding of the language. Furthermore, digital tools for learning listening are often more cost-effective than traditional classroom-based methods, as they eliminate the need for physical resources such as textbooks and audio equipment.

2.3. Tips for using digital tools

To learn effectively, students need to have guidance. First, they have to choose the right tools. Choosing the digital tools that best fit your learning goals is important because there are many options available for improving listening skills (Mohammed, 2022). They need to think about things like the kind of material they are keen to learn, how they learn best, and how fun they want their learning to be. Thereafter, they need to set goals. Before starting their learning journey, they have to set specific goals for what they want to achieve. These objectives will help them stay focused and motivated as they progress through the resources. Then they must

practice regularly. Practice is key to strengthening our listening skills. Aim to listen for at least 15 to 30 minutes a day and gradually increase the duration as you become more comfortable.

2.4. Digital tools for learning listening

There are thousands of digital tools that we can use to learn listening. They can use websites like YouTube and TED Talks, and podcast platforms like Spotify and Apple Podcasts offer a vast library of audio and video content that learners can use to strengthen their listening skills (Li et al., 2020). Teachers can utilize online teaching media that offer various listening materials. One of the most popular media that is accessible anytime and anywhere is YouTube (Andriani et al., 2022). Or they can use apps like Duolingo, Babbel, and Rosetta Stone to offer interactive lessons that teach listening skills through games, quizzes, and audio exercises (Kumar et al., 2022). They can also use VR and AR tools like ImmerseMe and R, which allow learners to immerse themselves in virtual environments where they can practice listening skills in real-life scenarios (Bendeck-Soto et al., 2020; Kyrilitsias & Michael-Grigoriou, 2022).

2.5. Listening skills in language learning

Listening has an important role both in daily life and in academic contexts, as it is crucial for people to sustain effective communication. Listening skills are critical in learning English. Lepola et al. (2023) pointed out that there is a direct relationship between listening and speaking, and that individuals whose listening skills are not developed will not be able to speak eloquently. Many experts consider listening to be the most challenging skill for non-native English speakers to master. Listening skills are essential for learning a language because they provide learners with exposure to the language, help them develop comprehension, improve pronunciation, build confidence, and promote cultural understanding (Tacarraoucht et al., 2022). Listening comprehension sets a foundation for the future acquisition of speaking. By practicing listening exercises regularly, learners can develop strong listening skills that will enable them to communicate effectively in the language they are learning (Em, 2023).

2.6. Research gap

Despite the increasing global focus on incorporating digital technologies into language education, a significant study gap exists in the Cambodian context regarding their specific effects on enhancing students' listening skills. International studies have underscored the efficacy of many digital resources, such as podcasts, online courses, and virtual reality environments, yet empirical research about Cambodian students' perceptions, access, and utilization of these platforms for enhancing listening comprehension remains scarce. Elements such as digital literacy, internet accessibility, and the presence of localized content may affect the acceptance and efficacy of these tools in Cambodia. Furthermore, there is an absence of studies contrasting the preferences and perceived efficacy of digital technologies with conventional techniques among Cambodian learners. This gap highlights the necessity for context-specific research that examines students' attitudes, usage patterns, and the actual effects of digital technologies on the development of listening skills in Cambodian educational contexts.

3. Methodology

This section outlines a research technique that encompasses the entire research process, starting from the initial stages of ideation to the final points. It highlights four fundamental components that act as a framework for the inquiry: the research design, the research instruments and

apparatus, the methodologies for data collection, and the interpretation of the results. The research design not only establishes the overarching framework for the study but also delineates the precise methods employed to address the research questions (Turner et al., 2017). The section on tools and equipment delineates the specific procedures employed for data collection, including surveys tailored to the intended audience. The data collection processes elucidate the methods and timing of data acquisition, ensuring the maintenance of consistency and reliability throughout the procedure. Finally, the data analysis section outlines the methodologies employed to interpret the collected data and to draw significant conclusions regarding students' experiences with digital tools in enhancing their listening skills.

3.1. Research design

The current study employs quantitative methods for the whole research process (Amaratunga et al., 2002). Quantitative research is important for studying the use of digital tools in learning listening because it allows researchers to collect and evaluate large quantities of data in numbers, which can provide an understanding of how effective these tools are at improving listening skills. Quantitative research can provide information on how learners perceive and interact with digital tools for listening, as well as the problems and benefits they face. This data aids educators in comprehending how to tailor digital tools to the requirements of diverse learners and learning scenarios.

3.2. Samples and sampling techniques

The sampling techniques of the current study were simple random based on a volunteer basis. Specifically, seventy students who were enrolled in the third year of studies at NUBB as of 2024 made up the sample size. At the time, they were using digital technologies to assist them in their studies in order to improve their listening abilities. Therefore, to gather data that allowed researchers to examine and investigate how the technology aided the students in improving their listening skills, the researchers requested that the students complete the survey questionnaire.

3.3. Instruments

A survey using Google Forms served as the primary research instrument for this study (see Em, 2021). It was designed to gather information from students regarding their perspectives, attitudes, and experiences with digital tools used in listening skill development. The main objective of the survey was to explore how digital technologies were utilized in the process of acquiring listening skills. To gain a deeper understanding of students' experiences, the survey included both Likert-scale (agree–disagree) items and open-ended questions that allowed for varied and detailed responses. Specifically, the survey aimed to examine students' perceptions of the effectiveness of digital listening tools, as well as the challenges they had encountered while using them (see Em et al., 2022).

3.4. Data collection procedures

The data-collecting procedure's main goal was to gather information on how well different digital tools may improve learners' listening abilities. The participants were EFL students at NUBB. They were willing to engage in the study and provided feedback on the digital tools used. Data collection also aimed to analyze the collected data from the survey to determine the effectiveness of the digital tools in enhancing listening skills and, additionally, to consider the feedback provided by the participants to identify areas of strength and areas for improvement

in the tools. The participants were well-informed, and they volunteered to fill in the questionnaire items ready set in the Google Forms.

3.5. Data analysis

The collected quantitative data were evaluated through descriptive statistical methods (Mishra et al., 2019) to assess students' views, usage, and preferences concerning digital tools for enhancing listening abilities. Frequency and percentage distributions were utilized to encapsulate responses to each survey topic, facilitating a clear comprehension of patterns and trends within the data. The survey items were categorized thematically based on perceptions, utilization and efficacy, and preferences for digital versus traditional approaches. Microsoft Excel was utilized to compute totals, agreement and disagreement rates, and to provide tabular representations of the data. This analytical method enabled the recognition of overarching trends among participants without employing inferential statistical analysis.

4. Findings and discussion

This section delineates the results of the survey about students' perceptions of utilizing digital technologies for enhancing listening abilities. It examines the efficacy of digital tools in improving listening comprehension, their usage frequency relative to conventional approaches, and students' preferences toward their application. The analysis contextualizes these findings within the current literature, offering insights into the transformative impact of digital technologies on language acquisition and the potential difficulties students encounter in properly utilizing these resources.

4.1. Findings

Table 1. Students' perceptions of the use of digital tools in learning listening skills

No.	Survey Questions	SA	A	N	D	SD	TA	TA (%)	TD	TD (%)
1.	Can digital tools enhance language learners' ability to comprehend spoken language effectively?	11	41	13	4	1	52	74.2%	5	7.14%
2.	I have found digital tools to help improve my listening abilities.	9	45	11	2	3	54	77.1%	5	7.14%
3.	I encountered some challenges when using digital tools for learning listening.	3	45	15	7	0	48	68.5%	7	10.0%
4.	I noticed improvements in my listening comprehension since incorporating digital tools.	4	41	17	8	0	45	64.2%	8	11.4%

5.	Digital tools have significantly contributed to my overall progress in learning to listen.	4	42	15	8	1	46	65.7%	9	12.8%
6.	Using digital tools in learning to listen has been effective for me.	5	46	12	6	1	51	72.8%	7	10.0%

Note: SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree, TA = Total Agreement (SA + A), TA (%) = Total Agreement Percentage, TD = Total Disagreement (D + SD), TD (%) = Total Disagreement Percentage

As can be shown in Table 1, the vast majority of students (74.29%) are in agreement that the use of digital technologies can improve their capacity to grasp spoken language when compared to the number of students who are in disagreement (7.14%). Similar to the previous statement, 77.14% of respondents stated that digital tools were useful in enhancing their listening abilities, whereas the same number of respondents (7.14%) expressed dissatisfaction with this statement. 68.57% of respondents agreed that they had experienced some difficulties when using digital technologies, whereas 10% of respondents did not agree with this statement. Moreover, 64.29 percent of students reported gains in their listening comprehension since the implementation of digital tools, while 11.43 percent of students did not report any such changes. Only 12.86% of respondents thought that digital tools did not considerably contribute to their overall progress in learning listening, while the remaining 65.71% of respondents considered that digital tools did contribute significantly. In conclusion, 72.86 percent of the students thought that the utilization of digital resources for learning listening was successful for them, whereas ten percent of the students did not share this view.

Table 2. Students' usage and perceived effectiveness of digital tools in learning listening skills

No.	Survey Questions	SA	A	N	D	SD	TA	TA (%)	TD	TD (%)
1.	I use digital tools more frequently than other language learning activities for improving my listening skills.	4	41	19	5	1	45	64.2%	6	8.5%
2.	I have found some specific digital tools to be particularly effective for learning listening.	7	42	16	4	1	49	70.0%	5	7.1%

Note: SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree, TA = Total Agreement (SA + A), TA (%) = Total Agreement Percentage, TD = Total Disagreement (D + SD), TD (%) = Total Disagreement Percentage

According to the data presented in Table 2, 64.2% of the students stated that they utilized digital tools more frequently than other language learning activities to enhance their listening abilities, while only 8.5% of the students were in disagreement. While this was going on, seventy percent of those who participated in the survey believed that some digital tools were particularly useful for learning how to listen, with only seven-point one percent expressing opposition. According

to these data, there is a significant preference among the students for the utilization of digital resources in the development of listening skills, as well as a perception of the worth of doing so.

Table 3. Students' preferences and recommendations regarding digital tools vs. traditional methods in learning listening skills

No.	Survey Questions	SA	A	N	D	SD	TA	TA (%)	TD	TD (%)
1.	I prefer using digital tools to traditional methods for learning listening.	8	35	21	5	1	43	61.4%	6	8.5%
2.	I believe that digital tools are more effective than traditional methods for improving listening skills.	4	40	18	4	4	44	62.8%	8	11.4%
3.	I recommend the use of digital tools for learning listening skills from other language learners.	8	42	12	7	1	50	71.4%	8	11.4%

Note: SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree, TA = Total Agreement (SA + A), TA (%) = Total Agreement Percentage, TD = Total Disagreement (D + SD), TD (%) = Total Disagreement Percentage

Table 3 highlights the viewpoints of students regarding their preferences and recommendations regarding the utilization of digital tools in comparison to traditional techniques when it comes to the acquisition of listening skills. Digital tools were preferred by 61.4% of the students over traditional methods, while just 8.5% of the students were in disagreement with this preference. Likewise, 62.8% of respondents stated that digital technologies were more effective than traditional approaches, whereas 11.4% of respondents expressed disagreement with this statement. Furthermore, 71.4% of the participants suggested that other language learners make use of digital resources for improving their listening skills. This indicates that digital learning tools have a significant endorsement.

4.2. Discussion

This study sought to examine students' perspectives on the efficacy of digital tools in developing listening skills, their frequency of use, and their preferences relative to conventional techniques. The survey data findings, illustrated in the three tables, provide significant insights into the function of digital tools in language acquisition and students' experiences and preferences within this framework.

Table 1 indicates that most students regard digital technologies as a beneficial method for improving their listening comprehension abilities. 74.29% of respondents concurred that digital tools may markedly enhance their proficiency in understanding spoken language, whereas 77.14% deemed these technologies beneficial for augmenting their listening skills. Furthermore, 64.29% of students indicated enhancements in their listening comprehension

following the integration of digital resources into their educational practices. The findings corroborate other studies indicating that the judicious integration of digital resources into language education improves the overall learning experience (Paszke et al., 2019; Venkatesh et al., 2012). The favorable feedback concerning enhancements in hearing comprehension might be ascribed to the adaptability and availability of digital technologies, which facilitate students' engagement with listening materials at their own pace and convenience (Han, 2015).

Nevertheless, 10% of the respondents reported facing difficulties while utilizing digital tools for listening. The hurdles may include technological problems such as inadequate internet connectivity and unfamiliarity with specific tools, potentially impacting their learning experience (Gong et al., 2023). Consequently, although the overall perception is favorable, the limitations underscore the necessity for enhanced support and direction in the successful utilization of these technologies.

Table 2 indicates that 64.2% of students reported utilizing digital resources more often than other language learning activities to enhance their listening abilities. This signifies a substantial dependence on technology for language acquisition, aligning with the increasing trend of integrating digital media into educational environments (Kudale & Buktar, 2022). Moreover, 70% of the students identified certain digital tools as very useful for enhancing listening skills, indicating that some tools had distinctive features that better correspond with students' learning preferences.

The table also reveals that students are actively using digital tools with intent, indicating their awareness of the resources' potential to enhance their listening skills. The inclination towards digital tools instead of traditional techniques may indicate their congruence with students' digital proficiency, hence enhancing their comfort and efficiency in technology-mediated learning (Parmin et al., 2021).

Table 3 indicates that a majority of students (61.4%) favored the use of digital resources over traditional approaches for listening comprehension. Moreover, 62.8% of students said that digital tools were superior to traditional techniques in enhancing their listening skills. The results indicate a growing trend in the integration of technology in education, as digital tools offer interactive and interesting learning experiences that traditional methods often lack (Kudale & Buktar, 2022).

Furthermore, 71.4% of the students advocated for the utilization of digital tools to enhance listening skills among other language learners, underscoring their favorable experiences and confidence in the effectiveness of these resources. This support corresponds with research indicating that students having access to digital learning tools frequently express enhanced motivation and happiness in their learning experience (Chan et al., 2024; Venkatesh et al., 2012). These findings underscore the potential of digital tools to cultivate a more student-centered learning environment, granting learners increased autonomy over their educational experience.

5. Conclusion

In particular, the findings of this study lend support to the expanding body of literature that highlights the positive impact that digital technologies have on language learning, particularly with regard to the enhancement of listening abilities. In general, students report a higher level of involvement, improved comprehension, and a preference for digital tools over traditional methods of instruction. On the other hand, the difficulties that some students have experienced

indicate that there is a requirement for continuous support and training in order to make good use of these tools.

While giving sufficient advice and resources, educators and educational institutions must take into consideration the possibility of incorporating digital tools into the listening curriculum in a more extended manner. This would ensure that all students are able to make the most of the benefits that these tools offer. The precise digital tools that students find to be the most effective could be the subject of future research, as could the investigation of the long-term effects that the use of digital tools has on the acquisition of language.

Acknowledgments

The authors would like to express their sincere gratitude to our teacher, Mr. **Ly Sovann**, for his exceptional guidance, support, and insightful feedback throughout this study. Their heartfelt thanks also go to their dedicated teammates for their hard work, collaboration, and valuable contributions. Additionally, the authors deeply appreciate the participants who generously shared their time and experiences, which greatly enriched the quality and depth of this study.

The authors would also like to express their deepest gratitude to blind reviewers and the editorial team of CJESS for making this article appear in the scholarly world. Without their contributions, this article would not have appeared in academic circles. Therefore, their contributions are considered irreplaceable and helpful for the whole society, especially the scholarly society of research and publication.

Conflict of interest

No potential conflict of interest was reported by the authors.

Funding

The authors received no financial support for the study, authorship, and/or publication of this article.

Declaration of AI usage

The authors used QuillBot to polish the language in some parts of the article. However, they declared that the content of this article is totally theirs.

References

- Amaratunga, D., Baldry, D., Sarshar, M., & Newton, R. (2002). Quantitative and qualitative research in the built environment: application of “mixed” research approach. *Work study*, 51(1), 17–31. <https://doi.org/10.1108/00438020210415488>
- Andriani, K., Ardiana, & Firman. (2022). Teaching media in EFL classrooms: What are they and why select them? *Journal of Language Testing and Assessment*, 2(1), 87–97. <https://doi.org/10.56983/jlta.v2i1.214>
- Ayo, E. (2023). Blending Coursera in CEU courses: A study on the quality and educational impact. *GEO Academic Journal*, 4(1), 1–25. <https://doi.org/10.56738/issn29603986.geo2023.4.43>
- Bendeck-Soto, J. H., Toro Ocampo, D. C., Beltrán Colon, L. D. C., & Valencia Oropesa, A. (2020). Perceptions of the ImmerseMe virtual reality platform to improve English

- communicative skills in higher education. *International Journal of Interactive Mobile Technologies (IJIM)*, 14(7), 4–15. <https://doi.org/10.3991/ijim.v14i07.12181>
- Burns, M. (2011). *Distance education for teacher training: Modes, models, and methods*. Education Development Center.
- Chan, S., Maneewan, S., & Koul, R. (2024). Cooperative learning in teacher education: A means to foster learning motivation and academic engagement among EFL pre-service teachers. *European Journal of Teacher Education*, 47(4), 658–675. <https://doi.org/10.1080/02619768.2022.2117026>
- Em, S. (2021). Challenges of online learning during the COVID-19 pandemic: A survey of Cambodian high school students. *Cambodian Journal of Educational Research*, 1(2), 96–108. <https://doi.org/10.62037/cjer.2021.01.02.09>
- Em, S. (2023). Cambodian students' online learning challenges during the COVID-19 pandemic: A vision for future measures. *International Journal of Cambodian Education*, 1(1), 1–5.
- Em, S., Chin, P., & Pen, D. (2024). COVID-19 and school closures: Transformation of shadow education in the Cambodian context. In Md. B. Alam (Ed.), *Shadow education in Asia: Policies and practices* (pp. 136–159). IGI Global. <https://doi.org/10.4018/979-8-3693-2952-8.ch009>
- Em, S., Phann, S., & Khan, S. (2022). Cambodian EFL university students' perceptions of online learning effectiveness during the COVID-19 pandemic: A survey study. *Cambodian Journal of Educational Research*, 2(2), 15–34. <https://doi.org/10.62037/cjer.2022.02.02.02>
- Gong, Y., Luo, H., Liu, A. H., & Karlinsky, L. (2023). *Listen, think, and understand*. arXiv. <https://arxiv.org/abs/2301.00000>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Han, M. (2015). An empirical study on the application of cooperative learning to English listening classes. *English Language Teaching*, 8(3), 177–184. <https://eric.ed.gov/?id=EJ1075221>
- Heng, K. Sol, S. Kaing, & S. Em (Eds.) (2023), *Innovations and challenges in Cambodian education*. Cambodian Education Forum. <https://cefcambodia.com/2023/09/18/blended-learning-the-way-forward-for-cambodian-higher-education-in-the-post-covid-19-pandemic/>
- Henseler, J., Hubona, G. S., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems*, 116(1), 2–20. <https://doi.org/10.1108/IMDS-09-2015-0382>
- Kudale, P., & Buktar, R. (2022). Investigation of the impact of augmented reality technology on the interactive teaching and learning process. *International Journal of Virtual and Personal Learning Environments (IJVPLE)*, 12(1), 1–16. <https://doi.org/10.4018/IJVPLE.285594>
- Kumar, N., Kaushal, R. K., Janagal, M., Singh, S., & Khare, A. (2022). Device for facilitating remote interactive lessons. *ECS Transactions*, 107(1), 1–10. <https://doi.org/10.1149/10701.1619ecst>
- Kyrlitsias, C., & Michael-Grigoriou, D. (2022). Social interaction with agents and avatars in immersive virtual environments: A survey. *Frontiers in Virtual Reality*, 2, 1–13. <https://doi.org/10.3389/frvir.2021.786665>
- Lepola, J., Kajamies, A., Laakkonen, E., & Collins, M. F. (2023). Opportunities to talk matter in shared reading: The mediating roles of children's engagement and verbal

- participation in narrative listening comprehension. *Early Education and Development*, 34(8), 1896–1918. <https://doi.org/10.1080/10409289.2023.2188865>
- Li, H. O. Y., Bailey, A., Huynh, D., & Chan, J. (2020). YouTube as a source of information on COVID-19: A pandemic of misinformation? *BMJ global health*, 5(5), 1–6. <https://gh.bmj.com/content/bmjgh/5/5/e002604.full.pdf>
- Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of Cardiac Anaesthesia*, 22(1), 67–72. https://journals.lww.com/aoca/fulltext/2019/22010/descriptive_statistics_and_normality_tests_for.11.aspx
- Mohammed, T. (2022). Designing an Arabic speaking and listening skills e-course: Resources, activities, and students' perceptions. *Electronic Journal of E-Learning*, 20(1), 53–68. <https://doi.org/10.34190/ejel.20.1.2177>
- Nunes, M., Adão, T., Shahrabadi, S., Capela, A., Carneiro, D., Branco, P., ... & Peres, E. (2024). ARPocketLab: A mobile augmented reality system for pedagogic applications. *Computers*, 13(6), 1–28. <https://doi.org/10.3390/computers13060148>
- Parmin, P., Syafi, M. Q., Junaedi, I., Yulianto, A., Purwantoyo, E., & Mubarak, I. (2021). Cultural integration on students' productivity during distance learning. *Jurnal Pendidikan dan Pengajaran*, 54(3), 415–424. <https://doi.org/10.23887/jpp.v54i3.38924>
- Paszke, A., Gross, S., Chintala, S., Chanan, G., Yang, E., DeVito, Z., Lin, Z., Desmaison, A., Antiga, L., & Lerer, A. (2017, October 28). *Automatic differentiation in PyTorch*. NIPS 2017 Workshop on Autodiff. OpenReview. <https://openreview.net/forum?id=BJJsrnfCZ>
- Sabrila, R. A. P., & Apoko, T. W. (2022). The effectiveness of podcasts on listening skills for vocational school students. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, 10(2), 1177–1186. <https://doi.org/10.24256/ideas.v10i2.2897>
- Sim, T., & Em, S. (2023). *Blended learning: The way forward for Cambodian higher education in the post-COVID-19 pandemic*. In K. Heng, K. Sol, S. Kaing, & S. Em (Eds.), *Innovations and challenges in Cambodian education* (pp. 37–52). Cambodian Education Forum. <https://cefcambodia.com/books/>
- Szymkowiak, A., Melović, B., Dabić, M., Jeganathan, K., & Kundi, G. S. (2021). Information technology and Gen Z: The role of teachers, the internet, and technology in the education of young people. *Technology in Society*, 65, 1–10. <https://doi.org/10.1016/j.techsoc.2021.101565>
- Tacarroucht, K., Zano, K., & Zamorano, A. (2022). Team games-language learning model in improving students' speaking and listening skills viewed from creativity. *Journal of Language and Literature Studies*, 2(1), 53–61.
- Turner, S. F., Cardinal, L. B., & Burton, R. M. (2017). Research design for mixed methods: A triangulation-based framework and roadmap. *Organizational research methods*, 20(2), 243–267. <https://doi.org/10.1177/1094428115610808>
- Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157–178. <https://doi.org/10.2307/41410412>
- Whalley, B., France, D., Park, J., Mauchline, A., & Welsh, K. (2021). Towards flexible personalized learning and the future educational system in the fourth industrial revolution in the wake of Covid-19. *Higher Education Pedagogies*, 6(1), 79–99. <https://doi.org/10.1080/23752696.2021.1883458>