



## Using Memrise as a Technology-Based Learning Media in Improving Students' Speaking Skills

**Roni Subhan <sup>1</sup>, Nur Syariatin <sup>2</sup>, Rodyal Ihsan <sup>3</sup>, Andi Musdalifah <sup>4</sup>, Yaredi Waruwu <sup>5</sup>**

<sup>1</sup> *Universitas Islam Negeri Kiai Haji Achmad Siddiq Jember, Indonesia*

<sup>2</sup> *Universitas Muhammadiyah Luwuk Banggai, Indonesia*

<sup>3</sup> *Sekolah Tinggi Ilmu Keguruan dan Ilmu Pendidikan Muhammadiyah Sungai Penuh, Indonesia*

<sup>4</sup> *Politeknik Bombana, Indonesia*

<sup>5</sup> *Universitas Nias, Indonesia*

**Corresponding Author:** Roni Subhan, E-mail; [ronisubhan@uinkhas.ac.id](mailto:ronisubhan@uinkhas.ac.id)

### Article Information:

Received July 06, 2024

Revised July 14, 2024

Accepted August 14, 2024

### ABSTRACT

This study aims to investigate the effectiveness of using technology-based learning platforms, especially Memrise, to improve students' speaking skills. At a time when technology continues to develop rapidly, the use of digital learning platforms is becoming increasingly important in efforts to improve student learning outcomes. This study involved students as participants in a learning environment to conduct experiments using Memrise as a learning medium to develop speaking skills. This study applies a class action research approach with a qualitative approach. Data collection was carried out through observation, interviews, and documentation review of the learning activities carried out by students using Memrise. The results of the study show that the use of Memrise as a technology-based learning medium is effective in increasing student motivation, developing speaking skills, and increasing active participation in the learning process. This platform provides an interactive environment that supports independent and collaborative speaking practice. The results of this study have important implications for the design of learning strategies that focus on developing speaking skills through the use of technology. These findings also highlight the importance of integrating technology into education to address communication challenges in everyday life. So, the use of Memrise as a technology-based learning media can be seen as a suitable solution to improve students' speaking skills.

**Keywords:** Learning Media, Memrise Technology, Speaking Skills.

Journal Homepage

<https://ejournal.staialhikmahpariangan.ac.id/Journal/index.php/jiltech/>

This is an open access article under the CC BY SA license

<https://creativecommons.org/licenses/by-sa/4.0/>

How to cite:

Subhan, R., Syariatin, N., Ihsan, R., Musdalifah, A & Waruwu, Y. (2024). Using Memrise as a Technology-Based Learning Media in Improving Students' Speaking Skills. *Journal International of Lingua and Technology*, 3(2), 441–452.

<https://doi.org/10.55849/jiltech.v3i2.674>

Published by:

Sekolah Tinggi Agama Islam Al-Hikmah Pariangan Batusangkar

## INTRODUCTION

In an era of development(Di Vaio et al., 2020)Rapid technology, the use of technology-based learning media has brought about a fundamental transformation in the world of education. Technology advances(Siciliano et al., 2020)Information and communication (ICT) has opened the door to new opportunities in the learning and teaching process. Technology-based learning media includes various tools, platforms(Farouk et al., 2020), and apps designed to increase engagement(Classen et al., 2020), participation, and student learning achievement. Technology has enabled educators to go beyond the boundaries of traditional learning(El Sadik & Al Abdulmonem, 2021), enriching students' learning experiences, and facilitating access to unlimited information and resources. With the ability to present content in various multimedia forms(Aslam & Curry, 2021), such as text, images, audio and video, learning media(Lee et al., 2023)technology-based learning can provide a more interesting, interactive and relevant learning experience to student needs.

Technology has provided new and innovative approaches(Ahmad et al., 2021)to improve speaking skills(El Majidi et al., 2021)students through a more interactive, adaptive and directed approach. Technology-based learning platforms offer a learning environment(El Bilali & Taleb, 2020)that supports collaboration, reflection, and iterative speaking practice. With the use of technology, students can practice speaking in various communication situations(Sharma et al., 2020)that can be simulated, allowing them to understand and overcome challenges they may face in real life. Apart from that, technology also facilitates access(Daly et al., 2021)students to a variety of learning resources and materials. With the help of the internet, students can access study materials(Aghaebrahimian et al., 2022), audio, video and online tutorials that support the development of their speaking skills. In addition, there are voice analysis tools and automatic feedback in the application(Masias et al., 2021)technology-based technology allows students to monitor and evaluate their progress more effectively.

## Review of Literature

### 1. Memrise

Memrise app is a Language learning platform(- Lie et al., 2020)and other skills designed to help users learn a variety of content(Caglio et al., 2020)effectively through an engaging and interactive approach. Memrise primarily focuses on language learning, but also covers many other topics such as science, popular culture, history, and more. This application can be accessed via mobile devices(Schnauber-Stockmann & Karnowski, 2020)and the web, Memrise uses spaced repetition to help users retain and remember information better. This concept involves rearranging learning material according to the level of forgetfulness. More difficult or memorized material will appear more often, while advanced material will appear less often. This application uses learning cards(Singh et al., 2022)which can contain text, images, and sound. Users will learn new vocabulary or other information through these flashcards, helping to improve memory and understanding. Using multimedia: One

of Memrise's strengths is its ability to integrate(Muscio & Ciffolilli, 2020)various media, such as images and sound, into the learning process. This helps users understand and remember information in a more varied and effective way.

Memrise also has features(Bommert et al., 2020)to help develop speaking skills. Users can listen(Saloranta et al., 2020)and record themselves to practice pronunciation and speaking in the language being studied. User community: Memrise helps users interact(Das et al., 2021)with online communities, share knowledge, and support each other in the learning process. Multiple languages and themes: The app offers a variety of languages and topics to learn from, making it suitable for users of all backgrounds and interests. Memrise has a freemium business model, where some premium features and additional content are available by subscription. Users can track their learning progress, view statistics, and identify areas where they need more focus. The Memrise app has become a popular choice for those who want to learn a language on their own or another subject. Learning methods(Glielmo et al., 2021)The interactive and adaptive nature, as well as the use of multimedia, make Memrise an effective tool for developing speaking skills, vocabulary knowledge, and overall understanding.

## 2. Speaking Skills

Speaking skills are the personal ability to convey messages, ideas or information clearly, effectively and in context through the use of spoken language. This involves the use of words(Haro-Martínez et al., 2021), intonation, vocals, and facial expressions to communicate with others. Speaking skills do not only include the ability to speak a language(Kidron, 2022), but also the ability to adapt to different situations and objects of communication,Students need to develop the ability to pronounce words clearly and correctly and understand the pronunciation of sounds in the language they speak. Having a rich and varied vocabulary allows students to communicate ideas and information more accurately and variedly. Understanding correct grammar and sentence structure helps students build coherent and effective sentences. Good listening skills are an important part of speaking skills. Students must be able to understand(Cózar et al., 2021)what others say, respond appropriately, and engage in conversation. Proper intonation and emphasis can help convey more emotions, meaning and messages in spoken communication. Students can adapt their speaking style to suit different contexts and audiences, for example speaking informally in class or casually with friends.

Speaking skills(Metwally et al., 2022)Public speaking involves the ability to speak confidently and effectively when speaking in front of a larger audience, such as during a presentation or class speech. Social interaction skills, Speaking also includes the ability to interact(Di Vaio et al., 2020)positively and effectively with others in a variety of social situations. Students can think quickly and react appropriately in conversations, including dynamic and fast-paced conversations. Speaking skills also include the ability to express ideas creatively(Jessen et al., 2020)and express personality and personal views. Good speaking skills are not only important in everyday communication, but also have a significant impact in various aspects of life, such as education, career, and social relationships. Therefore, developing students' speaking

skills is an important goal of education to help them become effective and confident communicators.

There are several research opinions regarding The use of Memrise as a technology-based learning media in improving students' speaking skills, the first according to(Sari, HP, & Setiawan, WH (2021), stated in his research Some researchers may have found that the use of Memrise or technology-based learning media in general has a positive impact in improving students' speaking skills. They may highlight the advantages of this method in presenting content interactively, supporting multiple iterations, and providing instant feedback. According to(Yuslizar, FA, Zahruddin, A., Ulfi, SL, & Hilmi, D. 2023) which states that other researchers may highlight several challenges or limitations in using Memrise as a learning medium. This may include concerns about possible over-reliance on technology, lack of direct social interaction, or potential privacy issues in the use of online platforms. Finally, according to Yuliawati, L. (2018), opinions can also vary depending on the teaching context and the group of students studied. Some researchers may find that using Memrise is more appropriate for certain groups of students or in certain learning contexts, while others may find more positive results in different situations.

## **RESEARCH METHOD**

The method used in this research is a quantitative method. Quantitative research methods(Huang et al., 2020)This produces data in the form of numbers obtained by filling out a survey on Google Forms(Henshaw et al., 2020)and provided to students as research subjects. Apart from that, this quantitative method produces systematic, planned and structured research. This quantitative research method is widely used in research. This quantitative method is defined as the process of systematically and realistically discovering a phenomenon by collecting information, then measuring it and ensuring its truth by filling out questionnaires and interviewing stakeholders. This research is mostly carried out through statistical research where quantitative data is collected through research studies. This quantitative research method provides truly accurate and realistic information because the final results are numbers.

The type of research is a test whose aim is to test the use of Memrise as a technology-based learning medium in improving students' speaking skills. The researcher's data collection technique is to search for and collect factual and current information at that time. Data collection at observation points is a quantitative research data analysis technique. When analyzing data, one does so by describing and describing the information collected, without changing the source of the information obtained. The first step in this quantitative research is to find the root of the problem or formulate the problem, then carry out a literature review, establish a hypothesis, determine the method to be used, determine the instrument or research tool, and carry out data analysis and finally draw conclusions.

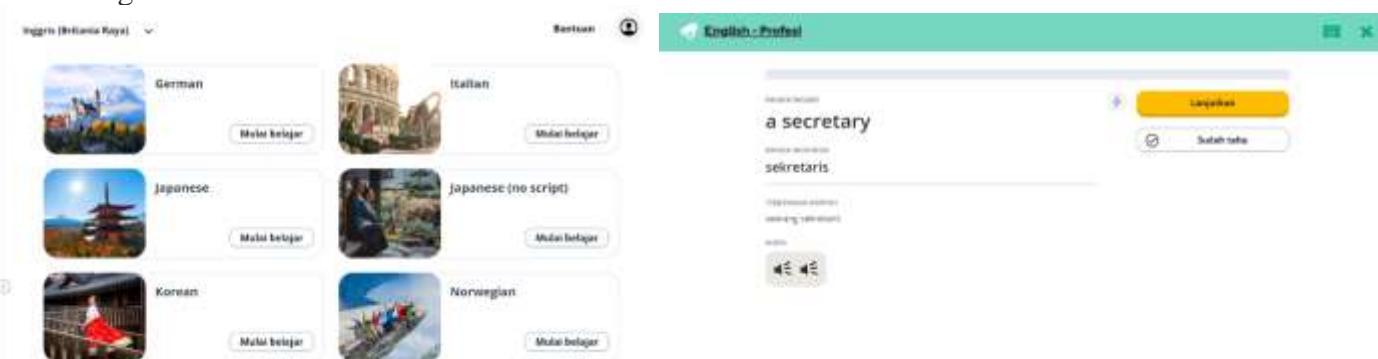
## **RESULTS AND DISCUSSION**

Technology-based learning has changed the educational landscape by providing innovative ways to teach and learn. One application that can be used as a technology-

based learning medium to improve students' speaking skills is Memrise. Memrise offers an interactive and fun play learning approach. Features like quizzes, challenges, and other gamification elements make learning more engaging for students. This can encourage active engagement and motivation of students to speak the target language. Through Memrise, students have the opportunity to speak actively in the target language. For example, this application can ask students to pronounce words, sentences, or dialogue orally. Continuous speaking practice can help increase a student's fluency and comfort in speaking the language.

Through Memrise, students have the opportunity to speak actively in the target language. For example, this application can ask students to pronounce words, sentences, or dialogue orally. Continuous speaking practice can help increase a student's fluency and comfort in speaking the language. Memrise's audio feature helps students understand and replicate accurate pronunciation. Students can listen to the pronunciation of words and phrases by native speakers, which helps them develop their ear for the sounds of the language. Memrise allows students to learn independently and at their own pace. They can access the app anytime and anywhere, making it easier to integrate learning into their daily schedule. It also helps students who are more shy or tend to feel nervous about speaking, because they can practice without pressure from fellow classmates.

The spaced repetition technique used by Memrise helps students repeat speaking material at certain time intervals. This helps strengthen long-term memory and allows students to continue practicing speaking skills consistently. Using Memrise not only focuses on speaking skills, but can also help improve students' vocabulary in the target language. By understanding and remembering new vocabulary, students will have more material to use when speaking. Memrise is a popular language learning and general knowledge application. This app is designed to help users learn different languages, vocabulary, scientific concepts, history, and more through interactive and playful learning methods.



**Figure 1: Example of Memrise Application in Improving Speaking Skills**

Based on the image above, it can be seen that the use of the Memrise application can be done in the world of education. Memrise uses a play learning approach that involves elements of gamification. This includes challenges, quizzes and other interactive elements that make the learning process more fun and interesting. One of Memrise's main features is its ability to help users learn foreign languages. This

application offers various language courses, ranging from popular languages such as English, Spanish, French, to rarer languages. Memrise combines text, images, and audio to facilitate learning. Users can listen to the pronunciation of words, see images, and understand the context in which words are used. Memrise uses repetition and spaced repetition techniques to help consolidate information in the user's mind. This means users will often be asked to repeat the material they are studying at certain time intervals, which can help strengthen long-term memory.

Researchers collected data about students' perceptions and responses to the use of Memrise as a technology-based learning medium in improving students' speaking skills, namely through a questionnaire. The purpose of distributing the questionnaire is to obtain results and find out whether the application of advanced technology can improve students' learning experience to the maximum and of course the goal of more advanced and quality education. By using the Memrise application optimally, it will have a positive impact on students and teachers. The benefits include, the Memrise application can help users improve language skills in an interactive and fun way. With a focus on speaking, pronunciation and vocabulary practice, users can feel more confident communicating in the target language, Memrise enables independent and flexible learning. Users can choose when and where they want to study, making it perfect for busy schedules. This provides great flexibility for those who want to combine learning with daily obligations. With its play learning approach and gamification elements, Memrise makes the learning process more fun. Challenges, quizzes and other interactive interactions make learning not only effective, but also entertaining. The questionnaire contains 15 statements about how important it is to implement the use of Memrise as a technology-based learning medium in improving students' speaking skills. And can be useful for society with the knowledge they have. When making a questionnaire, it is very important to design it well and according to procedures, such as choosing relevant and accurate statements, maintaining confidentiality and anonymity of respondents if necessary. The data obtained is then processed and analyzed using statistical methods to collect data about the desired variables.

**Figure 2: Memrise Opportunity Score in Improving Speaking Skills**

ASPECT	
Memrise Opportunities in Improving Speaking Skills	
Agree	Don't agree
90	10

Based on the picture above, it can be concluded that the opportunity to use the Memrise application to improve students' speaking skills offers great opportunities and many benefits. Most respondents gave positive answers and reactions to the great opportunities for implementing this technology in learning. The survey results were carried out to prove and show the benefits obtained from memrise for students and teachers. The advantage of implementing this technology is of course that it makes it easier for students to speak various languages and understanding foreign languages will feel fun. So that students will participate in following it, as well as learning that looks

real. When they see a scientific phenomenon that seems to be in that place, it makes students remember it for a long time.

**Figure 3: Challenges of implementing Virtual Reality in learning**

ASPECT	
Challenges of Implementing Virtual Reality in Learning	
Agree	Don't agree
60	40

Based on research completed with a questionnaire containing statements from respondents, it can be concluded that implementing the Memrise application in learning experiences several challenges, namely that using the Memrise application can make someone become too dependent on technology. This can result in over-reliance on electronic devices, and reduce direct interaction with the environment and people around you. Although Memrise can help improve speaking and listening skills, there is no substitute for direct social interaction with native speakers or fellow classmates. This can limit the development of communication skills in real-life situations. Although Memrise can provide automated feedback, it is no substitute for personal feedback from a teacher or mentor. This can hinder the ability to understand and correct errors quickly. Therefore, educators and developers need to understand and optimize user experience and involvement in Memrise for Education.

Table

No	Statement	SS	S	RR	T.S	STS
1	The Memrise application provides great benefits for quality and superior education	60%	40%	-	-	-
2	The learning experience provided by the Memrise application is very real and memorable, so the lessons will not be difficult to forget	64%	36%	-	-	-
3	Using this technology will make things easier for teachers and students and will save time and energy	70%	30%	-	-	-
4	Learning through the Memrise application will allow you to master more vocabulary	60%	40%	-	-	-
5	The learning atmosphere in class is more conducive and students participate enthusiastically	50%	50%	-	-	-
6	It is also easy for teachers to convey material with the help of this interactive learning media	55%	45%	-	-	-
7	Students will enjoy learning and be addicted to knowing various kinds of vocabulary in any language	60%	40%	-	-	-

8	Learning objectives can be achieved optimally if you are able to utilize this technology	70%	30%	-	-	-
9	Humans can use it in various areas of life more easily and make language easier	50%	50%	-	-	-
10	The Memrise application can help users improve language skills in an interactive and fun way	70%	30%	-	-	-
11	Students can speak fluently by using the Memrise application	70%	30%	-	-	-
12	Students feel like they are playing with their world, even though in reality they are learning in an exciting way	66%	34%	-	-	-
13	Lesson material that can be seen in real life with the Memrise application	55%	45%	-	-	-
14	With the Memrise application you can increase opportunities for students' speaking skills to explain directly in detail and precisely	60%	40%	-	-	-
15	Sharpen students' thinking and remembering vocabulary	60%	40%	-	-	-

The table above is a table of research results from the questionnaire given to students. Responses or respondents given by students are really needed to provide an assessment of the application of virtual reality to improve students' speaking skills. In this study there were 5 assessment categories, namely strongly agree (SS), agree (S), unsure (RR), disagree (TS), strongly disagree (STS). The statement that the Memrise application provides great benefits for quality and superior education, obtained a percentage of 60% in the strongly agree category. Meanwhile, the agree category received a percentage of 40%. Furthermore, the statement stating that the learning experience provided by the Memrise application is very real and memorable, so that the lessons will not be difficult to forget, obtained a percentage of 64% in the strongly agree category. Meanwhile, in the agree category, the percentage was 36%. In the statement that the use of this technology will make things easier for teachers and students and will save time and energy. Obtaining a percentage of 70% in the strongly agree category and in the agree category obtaining a percentage of 30%.

Furthermore, the statement states that learning through the Memrise application will result in mastering more vocabulary. Obtaining a percentage of 60% in the strongly agree category and in the agree category obtaining a percentage of 40%. The statement states that the learning atmosphere in the classroom is more conducive and students enthusiastically participate in it with enthusiasm. Obtaining a percentage of 50% in the strongly agree category, while in the agree category also obtained a percentage of 50%. Furthermore, the statement states that it is also easy for teachers to convey material with

the help of this interactive learning media. Obtaining a percentage of 55% in the strongly agree category as well as in the agree category also obtained a percentage of 45%. A statement that students will enjoy learning and be addicted to knowing various kinds of vocabulary in any language. Obtaining a percentage of 60% in the strongly agree category and in the agree category obtaining a percentage of 40%. Statement that learning objectives can be achieved optimally if you are able to utilize this technology. Obtaining a percentage of 70% in the strongly agree category and in the agree category obtaining a percentage of 30%.

The statement that humans can. Humans can use it in various areas of life more easily and make it easier to speak. Obtaining a percentage of 50% in the strongly agree category and in the agree category also obtaining a percentage of 50%. Next to the statement that. The Memrise application can help users improve language skills in an interactive and fun way. Obtaining a percentage of 70% in the strongly agree category and in the agree category obtaining a percentage of 30%. In the statement that students can speak fluently by using the Memrise application. Obtaining a percentage of 66% in the strongly agree category, while in the agree category the percentage was 34%. In the statement that students feel like they are playing with their world, even though in reality they are learning in an exciting way. Get a percentage of 55% in the strongly agree category and 45% in the agree category. Furthermore, the statement states that the Memrise application can increase opportunities for students' speaking skills to explain directly in detail and precisely. Obtaining a percentage of 60% in the strongly agree category and in the agree category getting a percentage of 40%. From the results of the questionnaire above, it is evident that respondents strongly support the application of virtual reality to improve students' learning experiences, and recognize its usefulness in education.

## **CONCLUSION**

Based on the results and discussion above, it can be concluded that Memrise is used as a technology-based learning medium to improve students' speaking skills. In the current digital era, the use of technology in learning is becoming increasingly important and influential. In this context, the Memrise application has proven itself as a useful tool in improving students' speaking skills through an interactive, technology-based learning approach. Based on a review of the use of Memrise as a technology-based learning media in improving students' speaking skills, the application of virtual reality in improving the learning experience has proven to be effective and able to provide memorable experiences for students and students. Memrise uses a play learning approach and gamification elements which make the learning process more interesting and interactive. This helps students feel motivated and engaged in improving their speaking skills. This application provides an active speaking practice experience through pronunciation exercises, dialogue simulations, and speaking challenges. Repeated speaking practice helps students feel more confident and skilled in communicating in the target language.

## REFERENCES

- Lie, A., Mina Tamah, S., - Gozali, I., Retno Triwidayati, K., Sari Diah Utami, T., & - Jemadi, F. (2020). Secondary School Language Teachers' Online Learning Engagement during the Covid-19 Pandemic in Indonesia. *Journal of Information Technology Education: Research*, 19, 803–832. <https://doi.org/10.28945/4626>

Aghaebrahimian, A., Stauder, A., & Ustaszewski, M. (2022). Testing the validity of Wikipedia categories for subject matter labeling of open-domain corpus data. *Journal of Information Science*, 48(5), 686–700. <https://doi.org/10.1177/0165551520977438>

Ahmad, A., Mubarak, NM, Jannat, FT, Ashfaq, T., Santulli, C., Rizwan, M., Najda, A., Bin-Jumah, M., Abdel-Daim, MM, Hussain, S. , & Ali, S. (2021). A Critical Review on the Synthesis of Natural Sodium Alginate Based Composite Materials: An Innovative Biological Polymer for Biomedical Delivery Applications. *Processes*, 9(1), 137. <https://doi.org/10.3390/pr9010137>

Aslam, A., & Curry, E. (2021). A Survey on Object Detection for the Internet of Multimedia Things (IoMT) using Deep Learning and Event-based Middleware: Approaches, Challenges, and Future Directions. *Image and Vision Computing*, 106, 104095. <https://doi.org/10.1016/j.imavis.2020.104095>

Bommert, A., Sun, X., Bischl, B., Rahnenführer, J., & Lang, M. (2020). Benchmark for filter methods for feature selection in high-dimensional classification data. *Computational Statistics & Data Analysis*, 143, 106839. <https://doi.org/10.1016/j.csda.2019.106839>

Caglio, A., Melloni, G., & Perego, P. (2020). Informational Content and Assurance of Textual Disclosures: Evidence on Integrated Reporting. *European Accounting Review*, 29(1), 55–83. <https://doi.org/10.1080/09638180.2019.1677486>

Classen, A., Eardley, C.D., Hemp, A., Peters, M.K., Peters, R.S., Ssymank, A., & Steffan-Dewenter, I. (2020). Specialization of plant–pollinator interactions increases with temperature at Mt. Kilimanjaro. *Ecology and Evolution*, 10(4), 2182–2195. <https://doi.org/10.1002/ece3.6056>

Cózar, A., Aliani, S., Basurko, O.C., Arias, M., Isobe, A., Topouzelis, K., Rubio, A., & Morales-Caselles, C. (2021). Marine Litter Windrows: A Strategic Target to Understand and Manage the Ocean Plastic Pollution. *Frontiers in Marine Science*, 8, 571796. <https://doi.org/10.3389/fmars.2021.571796>

Daly, A., Teeling, S. P., Ward, M., McNamara, M., & Robinson, C. (2021). The Use of Lean Six Sigma for Improving Availability of and Access to Emergency Department Data to Facilitate Patient Flow. *International Journal of Environmental Research and Public Health*, 18(21), 11030. <https://doi.org/10.3390/ijerph182111030>

Das, A., Das, A., Basu, A., Datta, P., Gupta, M., & Mukherjee, A. (2021). Newer guar gum ester/chicken feather keratin interact films for tissue engineering. *International Journal of Biological Macromolecules*, 180, 339–354. <https://doi.org/10.1016/j.ijbiomac.2021.03.034>

Di Vaio, A., Palladino, R., Hassan, R., & Escobar, O. (2020). Artificial intelligence and business models in the sustainable development goals perspective: A systematic literature review. *Journal of Business Research*, 121, 283–314. <https://doi.org/10.1016/j.jbusres.2020.08.019>

El Bilali, A., & Taleb, A. (2020). Prediction of irrigation water quality parameters using machine learning models in a semi-arid environment. *Journal of the Saudi Society of Agricultural Sciences*, 19(7), 439–451. <https://doi.org/10.1016/j.jssas.2020.08.001>

El Majidi, A., De Graaff, R., & Janssen, D. (2021). Debate as a pedagogical tool for developing speaking skills in second language education. *Language Teaching Research*, 136216882110506. <https://doi.org/10.1177/13621688211050619>

El Sadik, A., & Al Abdulmonem, W. (2021). Improvement in Student Performance and Perceptions through a Flipped Anatomy Classroom: Shifting from Passive Traditional to Active Blended Learning. *Anatomical Sciences Education*, 14(4), 482–490. <https://doi.org/10.1002/ase.2015>

Farouk, A., Alahmadi, A., Ghose, S., & Mashatan, A. (2020). Blockchain platform for industrial healthcare: Vision and future opportunities. *Computer Communications*, 154, 223–235. <https://doi.org/10.1016/j.comcom.2020.02.058>

Glielmo, A., Husic, B.E., Rodriguez, A., Clementi, C., Noé, F., & Laio, A. (2021). Unsupervised Learning Methods for Molecular Simulation Data. *Chemical Reviews*, 121(16), 9722–9758. <https://doi.org/10.1021/acs.chemrev.0c01195>

Handayani Non, R. (2022). Development of Virtual Reality Technology-Based Learning Applications to Increase Student Motivation and Learning Outcomes in Middle Schools. *Journal of Economics and Business*, 14(2), 141–144. <https://doi.org/10.5504/jeb.v14i2.186>

Henshaw, A.J., Sekarsari, P.W., Zolezzi, G., & Gurnell, A.M. (2020). Google Earth as a data source for investigating river forms and processes: Discriminating river types using form-based process indicators. *Earth Surface Processes and Landforms*, 45(2), 331–344. <https://doi.org/10.1002/esp.4732>

Huang, S., Zheng, X., Ma, L., Wang, H., Huang, Q., Leng, G., Meng, E., & Guo, Y. (2020). Quantitative contribution of climate change and human activities to vegetation cover variations based on GA-SVM model. *Journal of Hydrology*, 584, 124687. <https://doi.org/10.1016/j.jhydrol.2020.124687>

Jessen, A., Hilken, T., Chylinski, M., Mahr, D., Heller, J., Keeling, D.I., & De Ruyter, K. (2020). The playground effect: How augmented reality drives creative customer engagement. *Journal of Business Research*, 116, 85–98. <https://doi.org/10.1016/j.jbusres.2020.05.002>

Kidron, A. (2022). When colonialism and nationalism meet - but speak a different language: The case of Haifa during the British Mandate. *British Journal of Middle Eastern Studies*, 49(4), 559–579. <https://doi.org/10.1080/13530194.2020.1825928>

Lee, J., Choi, H., Davis, R.O., & Henning, M.A. (2023). Instructional media selection principles for online medical education and emerging models for the new normal. *Medical Teacher*, 45(6), 633–641. <https://doi.org/10.1080/0142159X.2022.2151884>

Masias, A., Marcicki, J., & Paxton, W. A. (2021). Opportunities and Challenges of Lithium Ion Batteries in Automotive Applications. *ACS Energy Letters*, 6(2), 621–630. <https://doi.org/10.1021/acsenergylett.0c02584>

Metwally, A.A., Hakami, S.A.A., & Alabdaly, A.H. (2022). Factors Contributing to the Gap Between Listening and Speaking Skills Performance Among University Students Post COVID-19. *Journal of Language Teaching and Research*, 13(5), 925–935. <https://doi.org/10.17507/jltr.1305.04>

Muscio, A., & Ciffolilli, A. (2020). What drives the capacity to integrate Industry 4.0 technologies? Evidence from European R&D projects. *Economics of Innovation and New Technology*, 29(2), 169–183. <https://doi.org/10.1080/10438599.2019.1597413>

Saloranta, A., Alku, P., & Peltola, M.S. (2020). Listen-and-repeat training improves perception of second language vowel duration: Evidence from mismatch

negativity (MMN) and N1 responses and behavioral discrimination. International Journal of Psychophysiology, 147, 72–82.<https://doi.org/10.1016/j.ijpsycho.2019.11.005>

Schnauber-Stockmann, A., & Karnowski, V. (2020). Mobile Devices as Tools for Media and Communication Research: A Scoping Review on Collecting Self-report Data in Repeated Measurement Designs. *Communication Methods and Measures*, 14(3), 145–164.<https://doi.org/10.1080/19312458.2020.1784402>

Sharma, A., Vanjani, P., Paliwal, N., Basnayaka, C.M.W., Jayakody, D.N.K., Wang, H.-C., & Muthuchidambaranathan, P. (2020). Communication and networking technologies for UAVs: A survey. *Journal of Network and Computer Applications*, 168, 102739.<https://doi.org/10.1016/j.jnca.2020.102739>

Siciliano, A., Limonti, C., Curcio, G.M., & Molinari, R. (2020). Advances in Struvite Precipitation Technologies for Nutrients Removal and Recovery from Aqueous Waste and Wastewater. *Sustainability*, 12(18), 7538.<https://doi.org/10.3390/su12187538>

Singh, A., Ranjan, R. K., & Tiwari, A. (2022). Credit Card Fraud Detection under Extreme Imbalanced Data: A Comparative Study of Data-level Algorithms. *Journal of Experimental & Theoretical Artificial Intelligence*, 34(4), 571–598.<https://doi.org/10.1080/0952813X.2021.1907795>

---

**Copyright Holder :**  
© Roni Subhan et.al. (2024).

**First Publication Right :**  
© JILTECH: Journal International of Lingua and Technology

**This article is under:**

