ISSN: 2289-7844 | e-ISSN: 0127-9750
DOI: https://doi.org/10.37134/jictie.vol12.2.9.2025

Journal of ICT in Education (JICTIE)
Volume 12, Issue 2, Pages 138-148, 2025

Research Article

The Application of Generative Artificial Intelligence Technology Among Language Teachers in Facing Current Educational Challenges

Mohamad Asyraf Mohamad Shakri[1*], Ngoi Guat Peng[1], Khairul Ashraaf Saari[2], N. Lia Marliana[3]

[1]*Fakulti Bahasa dan Komunikasi, Universiti Pendidikan Sultan Idris, Perak, Malaysia; m20191000741@siswa.upsi.edu.my, gpngoi@fbk.upsi.edu.my*
[2]*Pusat Pengajian Islam, Umum dan Bahasa, Universiti Poly-Tech Malaysia, Wilayah Persekutuan Kuala Lumpur, Malaysia; ashraaf_s@uptm.edu.my*
[3]*Fakultas Bahasa dan Seni, Universitas Negeri Jakarta, Jakarta, Indonesia; nliamarliana@unj.ac.id*

Received: 20 January 2025; Revised: 2 September 2025; Accepted: 8 October 2025; Published: 25 October 2025

**corresponding author*

Abstract

The use of generative artificial intelligence (AI) technology in education has become a critical area of interest, particularly in improving the quality of teaching and learning (PdP) for language education among teachers in the Kota Bharu district, Kelantan. This study aims to explore language teachers' perceptions and acceptance of AI use on the DELIMa platform, as well as to examine the extent of usage and level of mastery of AI technology in their teaching practices. Additionally, the study investigates the factors influencing the effectiveness of AI as a learning tool in enhancing teaching success. A quantitative research design was employed using a questionnaire distributed to language teachers under PPD Kota Bharu who have incorporated AI technology in their classrooms. The findings indicate a high level of positive perception and acceptance towards AI integration. While teachers reported feeling moderately skilled in using AI, they acknowledged the need for ongoing training and exposure to maximise its potential. Notably, the item with the highest mean value (3.36) reflects the belief that AI increases student motivation, whereas the lowest mean value (3.13) relates to AI's role in helping students understand materials better. Overall, AI application in PdP was found to be effective in enhancing student understanding, particularly in language learning. However, challenges such as insufficient training and concerns about overdependence on AI remain, highlighting the need for targeted support to fully harness AI's potential in improving classroom language instruction.

Keywords: Generative Artificial Intelligence, DELIMa Platform, Language Teachers, PPD Kota Bharu, Level of Mastery

INTRODUCTION

In this era of globalisation, language proficiency among primary school students, particularly in languages other than their mother tongue, becomes a valuable asset. However, Goh (2020) emphasises that the strong influence of the mother tongue is often an obstacle for students in producing Mandarin sounds that differ from their native language. One of the challenges faced by today's language teachers is adapting to the changing educational landscape, which increasingly incorporates information technology into teaching and learning.

The concept of Education 4.0 is an educational approach that integrates information and communication technology (ICT) comprehensively into the learning process. By leveraging technologies such as generative Artificial Intelligence (AI) and Big Data, Education 4.0 aims to enhance the quality of education and prepare students to face an increasingly complex world. The Malaysian Ministry of Education has outlined the benefits of ICT in improving the quality of education in Malaysia (Kementerian Pendidikan Malaysia, 2011; Samuri et al., 2016; Hasbullah et al., 2022).

Before the COVID-19 pandemic, the Ministry of Education (MoE) pioneered the use of online learning through the Malaysian Education Development Plan 2015-2025. The DELIMa platform (Digital Education Learning Initiative Malaysia) is one of the online learning platforms introduced by the Ministry of Education. One of the important aspects of DELIMa is the integration of technology, information, and generative Artificial Intelligence (AI) in the learning process in schools under the Ministry of Education (Ghafar et al., 2023).

The development of information and communication technology has significantly transformed the educational landscape in our country (Mohamad et al., 2022). Research shows that this technological advancement has successfully improved the quality of education in our country. This is supported by Chen (2018) in his research, showing that technology has great potential to enhance the quality of language pronunciation learning. This language learning effort has also been supported by the Malaysian Ministry of Education in integrating the use of technology in the learning process in the classroom to enrich the current learning process (Kementerian Pendidikan Malaysia, 2019). However, Chua et al. (2024) argue that the success of using this technology is highly dependent on current factors such as the selection of appropriate technology and support from the school.

This study examines the use of generative AI (Artificial Intelligence) technology among language teachers in PPD Kota Bharu in facing current educational challenges. This study aims to identify language teachers' perceptions and acceptance of AI use on the DELIMa platform, as well as discuss the level of use and mastery of AI technology in teaching and

learning among language teachers. In addition, this study also aims to analyse the factors contributing to the effectiveness of AI technology as a learning tool today in influencing the success of teaching.

Artificial Intelligence (AI) Technology in Contemporary Education

Generative AI can be defined as a branch of computer science that aims to create systems that are capable of performing tasks that usually require human intelligence (Tumiran et al., 2025). The implementation of these tasks involves natural language understanding, pattern recognition, problem solving, learning from experience and decision-making skills. These skills can indirectly contribute to the advancement of the digital era, especially in education in Malaysia.

In line with the rapid development of AI technology, it has brought numerous benefits across various fields, including education. Education today faces the challenge of adapting to technological advancements, particularly AI technology. This challenge, in turn, creates opportunities to enhance the efficiency and effectiveness of learning. Therefore, developments in generative artificial intelligence are seen as a future opportunity for teaching and learning (PdP) techniques.

The Malaysian government has taken the initiative to change learning patterns based on the use of Information and Communication Technology (ICT) in line with current technological developments (Muthiah & Annamalai, 2025). This shows that the development of technologies like AI requires a deep understanding of how technology can assist the learning process alongside students. However, this change brings challenges and the need for new competencies among educators and students. Research by Ifenthaler et al. (2024) indicates that the implementation of AI in education requires careful planning and collaboration among various stakeholders.

The use of AI technology in learning has gained attention in recent years. AI has great potential to personalise learning materials and deliver better instruction to each student. However, further studies are needed to address the challenges of AI technology among teachers in preparing for future challenges. One of the key initiatives introduced in Malaysia to support this development is DELIMa (Digital Educational Learning Initiative Malaysia), a platform provided by the Ministry of Education. DELIMa integrates AI tools to empower educators with accessible digital resources, including personalised learning platforms, virtual classrooms, and content creation tools. With AI features embedded in the system, DELIMa aims to enhance teaching efficiency, promote digital literacy, and support teachers in adopting 21st-century skills. This initiative reflects the government's commitment to leveraging AI to transform the education landscape and ensure teachers are equipped to meet the evolving demands of the digital era.

PROBLEM STATEMENT

The application of generative Artificial Intelligence (AI) technology is increasingly gaining attention in the field of education, particularly among language teachers in the Kota Bharu District Education Office (PPD). Language teachers are now facing contemporary educational challenges, such as the need to adapt teaching methods for students with varying levels of ability, as well as ensuring that teaching methods are more interactive and effective. Teachers need to equip themselves with certain skills in digital materials so that they can guide, mentor and assist students in implementing the education system in schools (Hassan et al., 2024). Although AI technology offers various applications that can support teachers in managing learning content, analysing student data, and providing more personalised teaching materials, research on teachers' perceptions of the application of AI in the teaching and learning process (PdP) has still received limited attention from current researchers.

Furthermore, the level of use and mastery of AI technology in teaching and learning among language teachers also needs to be explored. Teachers' ability to integrate AI technology into their teaching practices is crucial, especially within the context of language learning. Teachers' confidence in using AI technology for language learning can significantly enhance learning outcomes. According to Muthiah and Annamalai (2025), teachers need to plan language teaching strategies that are appropriate for this generation to ensure that the teaching and learning process can be carried out perfectly. Therefore, this study deserves attention in exploring teachers' perceptions, as well as their level of use and mastery of AI technology in addressing current educational challenges, particularly in language learning.

RESEARCH OBJECTIVES

The objectives of this study are to:

1. Identify the perceptions and acceptance of language teachers towards the use of AI on the DELIMa platform.
2. Discuss the level of use and mastery of AI technology in teaching and learning among language teachers.
3. Analyse the factors influencing the effectiveness of AI technology as a learning tool today in its impact on teaching success.

LITERATURE REVIEW

Research on the challenges of implementing generative AI in the education system in Malaysia has been conducted by several researchers before. A study by Tumiran et al. (2025) emphasised that generative AI has great potential to revolutionise the education system by enabling personalised learning, interactive learning experiences, accessibility, improving student performance, developing smart applications, and using chatbots or

virtual tutors. Tumiran et al. (2025) also emphasised the need to address research gaps such as infrastructure constraints, teacher training, and ethical issues in the effective use of AI in the classroom.

Next is a study by Muthiah and Annamalai (2025). This study found that teachers in Malaysia have shown a high level of familiarity and knowledge of applications such as Google Slides, Quizizz, and Google Quiz Forms, but are still less skilled in using Canva, Powtoon, and YouTube to build more interactive teaching resources. The results of this study indicate that there is an imbalance in technology mastery, and continuous training needs to be addressed to maximise the effectiveness of using generative AI through the DELIMa 2.0 platform in teaching, especially in language grammar.

Meanwhile, a study by Low and Mohamad Nasri (2024) showed that teachers in rural areas had a positive perception of the effectiveness of DELIMa 2.0 in diversifying teaching and learning methods. However, teachers in rural areas have constraints such as poor internet connectivity and a lack of digital facilities and therefore cannot ensure the full implementation of technology during teaching and learning.

RESEARCH METHODOLOGY

Study Sample

The respondents for this study consisted of 85 individuals, including teachers of Malay, English, Arabic, and Chinese languages who teach at schools under the Ministry of Education (KPM) in the Kota Bharu district. These language teachers have been exposed to the use of AI technology in their teaching and learning processes through the DELIMa platform provided by KPM. The sample was selected using purposive sampling, focusing on participants with direct experience in using AI.

Data Collection

This study is conducted in a quantitative form using a questionnaire instrument. The questionnaire was distributed to respondents via Google Forms and completed online. The quantitative data collected from the online questionnaire were then analysed using the Statistical Package for Social Science (SPSS) Version 26.0. The questionnaire consists of four (4) sections: Section A (Respondent Background), Section B (Language Teachers' Perceptions and Acceptance of AI Use on the DELIMa Platform), Section C (Level of Use and Mastery of AI Technology in Teaching and Learning among Language Teachers), and Section D (Factors Affecting the Effectiveness of AI Technology as a Learning Tool in Influencing Teaching Success), as shown in the Table 1. All items in the questionnaire use a 4-point Likert scale, namely: (1) Strongly Disagree, (2) Disagree, (3) Agree, and (4)

Strongly Agree. The Likert scale is used to measure the level of agreement or disagreement of respondents with a given statement. Data analysis in this study utilises descriptive analysis, specifically the mean.

Table 1: Sections, types of statements, and number of questionnaires

Sections	Types of Statements	Number of Questionnaires
Section A	Respondent Background	4
Section B	Language Teachers' Perceptions and Acceptance of AI Use on the DELIMa Platform	5
Section C	Level of Use and Mastery of AI Technology in Teaching and Learning among Language Teachers	6
Section D	Factors Affecting the Effectiveness of AI Technology as a Learning Tool in Influencing Teaching Success.	5

The reliability of the research instrument was assessed using the Cronbach's Alpha method to evaluate the internal consistency of 15 questionnaire items related to the application of artificial intelligence (AI) technology among language teachers in PPD Kota Bharu. The questionnaire employed a four-point Likert scale, which was converted into numerical values for analytical purposes. The analysis revealed a total item variance of 5.86 and a total score variance of 32.73, resulting in a Cronbach's Alpha value of 0.88. This high reliability coefficient indicates that the items are consistent and well-constructed, making them suitable for measuring constructs associated with the use of AI in the language education context.

STUDY ANALYSIS

The following is the analysis and findings obtained from the questionnaire conducted through Google Forms. The detailed findings are shown in Table 2 (Section B), Table 3 (Section C), and Table 4 (Section D).

Table 2: Language teachers' perceptions and acceptance of AI use on the DELIMa platform

Item	Mean Value
A1. I feel confident that AI technology can improve the quality of language teaching and learning.	3.28

A2. I am concerned that AI will replace the role of teachers in the language learning process.	2.45
A3. I find the features of AI applications on the DELIMa platform helpful in preparing teaching materials.	3.34
A4. I find the features of AI applications on the DELIMa platform easy to use.	3.25
A5. I am willing to learn more about how to use AI in language teaching and learning.	3.41

According to Table 2, it was found that teachers agree that the use of AI technology can improve the quality of language teaching and learning, with a high mean value of 3.28. Regarding the item about concerns that AI will replace the role of teachers in the language learning process, the mean value recorded was the lowest, at 2.45. Meanwhile, for the item about teachers feeling supported by the features of AI applications available on the DELIMa platform in preparing teaching materials, the mean value was 3.34. Furthermore, respondents agreed that the features of AI applications on the DELIMa platform are easy to use, with a mean value of 3.25. The willingness of teachers to learn more about how to use AI was the highest, with a mean value of 3.41.

Table 3: Level of use and mastery of AI technology in teaching and learning among language teachers.

Item	Mean Value
B1. I frequently use the features of AI applications on the DELIMa platform in my daily learning activities.	3.26
B2. I feel confident in my ability to use the features of AI applications available on the DELIMa platform.	3.05
B3. I find it easy to integrate the features of AI applications into my lesson plans.	3.14
B4. I need further training to fully maximise the use of AI in language teaching.	3.06
B5. I am confident that with sufficient exposure, I can become a better AI user.	3.27

According to Table 3, it was found that teachers frequently use the features of AI applications on the DELIMa platform in their daily learning activities, with a high mean value of 3.26. Next, the mean value for the item regarding teachers' feeling confident in using the features of AI applications available on the DELIMa platform is 3.05. Meanwhile, respondents found it easy to integrate the features of AI applications into their lesson plans, with a mean value of 3.14. Additionally, respondents agreed that they require further training to fully maximise the use of AI in language teaching, as indicated by a mean value

of 3.06. Finally, the confidence of teachers that with sufficient exposure, they can become better AI users was reflected in the highest mean value, which is 3.27.

Table 4: Factors affecting the effectiveness of using AI technology as a learning tool in influencing teaching success

Item	Mean Value
C1. The use of AI on the DELIMa platform has increased student motivation to learn.	3.36
C2. I feel that AI has helped my students better understand the teaching materials.	3.13
C3. The use of AI has enhanced my students' ability to understand topics more easily.	3.22
C4. I believe that AI has helped me provide more effective teaching and learning to students.	3.16
C5. I believe that the success of AI usage greatly depends on the quality of content provided by the DELIMa platform.	3.32

The results of the data analysis in Table 4 show that respondents agree that the use of AI on the DELIMa platform has increased student motivation to learn, with the highest mean value of 3.36. Respondents also feel that AI has helped students better understand the teaching materials, with a mean value of 3.13. Next, for item 3, it shows that they agree that the use of AI has enhanced students' ability to understand topics more easily, with a mean value of 3.22. They also believe that AI has helped them provide more effective teaching and learning to students, with a mean value of 3.16. The success of AI usage also greatly depends on the quality of content provided by the DELIMa platform, with a high mean value of 3.32.

These findings support the third research objective, which is to analyse the factors influencing the effectiveness of AI technology as a learning tool in promoting teaching success. Based on the responses, five key factors were identified: (1) student motivation, (2) student understanding of materials, (3) ease of topic comprehension, (4) overall teaching effectiveness, and (5) the quality of AI-related content. These factors demonstrate that the effectiveness of AI is not only determined by the technology itself but also by how it supports pedagogical goals, enhances student engagement, and provides meaningful content. Therefore, teaching success through AI is influenced by a combination of student-centred outcomes and system-level support, particularly the relevance and quality of digital resources provided through platforms like DELIMa.

FINDINGS AND DISCUSSION

Generative AI is artificial intelligence created to mimic human cognitive abilities such as learning, thinking, and problem-solving. In addition to being easy to understand and access, AI systems are also capable of performing tasks that require human intelligence. The application of AI among teachers has opened opportunities to enhance the efficiency of educators in planning and implementing the teaching and learning process. The COVID-19 pandemic has changed the educational landscape in our country. It can be seen that the implementation of AI among language teachers has played an important role in supporting the transition in facing challenges after this pandemic. DELIMa is an excellent initiative from the Ministry of Education Malaysia to empower digital learning in the country. Through the integration of technology, specifically the DELIMa platform, it is seen as a potential platform to provide a more effective teaching experience for Malaysian teachers."

The findings of the study can be summarised as follows: The use of AI applications available on the DELIMa platform among language teachers in PPD Kota Bharu is very positive. The perceptions and acceptance of language teachers towards the use of AI in education are very good. Respondents believe that the application of AI can improve the quality of language teaching in the classroom. Although many of the teachers in PPD Kota Bharu have long been in service and are accustomed to conventional teaching methods, the use of AI applications has been well-received. Most teachers feel confident and find it easy to integrate AI technology into their daily lesson plans. However, the willingness of teachers to receive more training and exposure to technology is believed to help maximise the potential of this technology.

Furthermore, the use of AI technology in the teaching and learning process has greatly assisted both teachers and students during PdP sessions in schools. The use of AI has helped students understand teaching materials more effectively, leading to more successful learning outcomes. The quality of the AI applications provided on the DELIMa platform by the Ministry of Education (KPM) is seen to have greatly contributed to the success of AI technology use among language teachers in PPD Kota Bharu.

CONCLUSION

As a result, the application of generative Artificial Intelligence (AI) among language teachers in PPD Kota Bharu is very positive and well-received. AI not only facilitates the teaching and learning (PdP) process but also enhances the quality of language teaching in the classroom. Although many teachers have long been in service and are accustomed to conventional teaching approaches, they have successfully adapted to AI technology effectively.

The DELIMa initiative by the Ministry of Education Malaysia (KPM) plays a crucial role in facilitating the use of AI applications, which helps both teachers and students achieve

higher learning effectiveness. However, teachers still require more training and exposure to maximise the potential of this technology. Overall, this study successfully concludes that the application of AI in language education has great potential to help educators face current educational challenges and can significantly improve the efficiency and effectiveness of the teaching and learning process in schools.

Future research could explore the long-term impact of AI usage on student learning outcomes and teacher professional development across different regions and educational levels. Additionally, more in-depth studies should examine the ethical considerations and digital readiness of educators in integrating AI into the curriculum. From a policy perspective, the Ministry of Education is encouraged to develop structured training programs, establish clear guidelines for AI use in classrooms, and allocate sufficient resources to support sustainable AI integration in teaching practices.

ACKNOWLEDGEMENTS

This work was supported by the Sultan Idris Education University, Malaysia.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Mohamad Asyraf Mohamad Shakri: Conceptualisation, Methodology, Data Collection, Analysis, Initial Draft Preparation, Review, and Editing. **Ngoi Guat Peng**: Supervision, Conceptualisation, Validation, Reviewing, and Editing. **Khairul Ashraaf Saari**: Review and Editing. **N. Lia Marliana**: Methodology, Validation, Review and Editing.

DECLARATION OF GENERATIVE AI

During the preparation of this work, the authors used ChatGPT to enhance the clarity of the writing. After using ChatGPT, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

DATA AVAILABILITY STATEMENT

Data available on request from the authors.

REFERENCES

Abdullah, A. (2016). Penggunaan teknologi dalam pembelajaran bahasa kedua: satu kajian kes. *Jurnal Pengajaran Bahasa*. *12* (1). 1-15.

Chandra, R., & Prihastomo, Y. (2012). *Artificial Intelligence Definition: A Review*. 1–3. https://www.semanticscholar.org/paper/Artificial-Intelligence-Definition-%3A-A-Review-Chandra-Prihastomo/d959ad041acca7570a7229e51c18a297bb7ca0b2

Chen, L. (2018). The role of technology in second language pronunciation learning. *The Modern Language Journal*. *102* (1). 123-142.

Chua, N. A., Ahmad, M. B., Ismail, I. L. M., Abdul Mutalib, N. B., Saputra, J., Goh, Y. S., & Ngo, K. L. (2024). Technology integration in learning Mandarin Chinese as a foreign language in Malaysia and Germany. *International Journal of Advanced and Applied Sciences, 11*(9), 192–202. https://doi.org/10.21833/ijaas.2024.09.021

Ghafar, N. A., Rahmatullah, B., Razak, N. A., Muttallib, F. H. A., Adnan, M. H. M., & Sarah, L. L. (2023). Systematic literature review on digital courseware usage in Geography subjects for secondary school students. *Journal of ICT in Education, 10*(1), 26-39. https://doi.org/10.37134/jictie.vol10.1.3.2023

Goh, C. (2020). Overcoming challenges in teaching Chinese as a second language: The case of Malaysian schools. *International Journal of Education and Research*. *8* (5). 23-32.

Hasbullah, N. H., Rahmatullah, B., Mohamad Rasli, R., Khairudin, M., & Downing, K. (2022). Google Meet usage for continuity and sustainability of online education during pandemic. *Journal of ICT in Education, 9*(2), 46–60. https://doi.org/10.37134/jictie.vol9.2.4.2022

Hassan, H., Rahmatullah, B., & Mohamad Nordin, N. (2014). Towards School Management System (SMS) success in teachers' perception. *Malaysian Online Journal of Educational Technology, 2*(4), 50–60.

Ifenthaler, D., Majumdar, R., Gorissen, P., Judge, M., Mishra, S., Raffaghelli, J., & Shimada, A. (2024). Artificial intelligence in education: Implications for policymakers, researchers, and practitioners. *Technology, Knowledge and Learning, 29,* 1693–1710. https://doi.org/10.1007/s10758-024-09747-0

Kementerian Pendidikan Malaysia. (2011). Pelan Pembangunan Pendidikan Malaysia.

Kementerian Pendidikan Malaysia. (2019). *Kurikulum Standard Sekolah Rendah Bahasa Cina*. Putrajaya.

Low, W. X., & Mohamad Nasri, N. B. (2024). Teachers' perceptions of DELIMa 2.0 in the teaching and learning process. *International Journal of Academic Research in Progressive Education and Development, 13*(4), 1–12. https://doi.org/10.6007/IJARPED/v13-i4/23164

Mishra, P., & Koehler, M. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*. *108* (6). 1017-1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Mohamad, A. I., Rahmatullah, B., Ibrahim, L. F. M., Saari, E. M., & Downing, K. J. (2022). Exploring parents' perception of online learning through a systematic literature review. *Borneo International Journal, 5*(1), 8–15.

Muthiah, C., & Annamalai, M. D. (2025). Tahap pemahaman dan penggunaan aplikasi delima 2.0 oleh guru dalam pengajaran dan pembelajaran tatabahasa bahasa Tamil. *Muallim Journal of Social Science and Humanities*. *9* (1). 125 – 139

Russell, S. J., & Norvig, P. (20100. *Artificial Intelligence: A Modern Approach* (3rd ed.). Prentice Hall.

Samuri, S. M., Abdul Ghani, H., Rahmatullah, B., & Ab Aziz, N. S. (2016). Sistem sokongan keputusan untuk menilai dan memantau prestasi guru: Kajian rintis di SMK Bachok, Kelantan. *Journal of ICT in Education, 3,* 55–72.

Tumiran M. A., Baharuddin B. H. & Mohammad N. (2025). Potensi kecerdasan buatan (AI) dalam sistem pendidikan di Malaysia: Analisis kandungan. *Quantum Journal of Social Sciences and Humanities.* 6 (2). 237-250.