JURNAL PAMATOR

Vol. 18, No. 4a, 2025 p. 817-835
https://journal.trunojoyo.ac.id/pamator
ISSN: 2654-7856 (Online)
ISSN : 1829 -7935 (Print)

AI-Driven Language Learning: Transforming English Pedagogy in the Digital Era

Lusiana Dewi Kusumayati[1], Meita Maharani[2], Fatmawati[3], Dimas Arya Soeadyfa Fridyatama[4], Faoyan Agus Furyanto[5]

[1] Politeknik Penerbangan Surabaya, Jl. Jemur Andayani I No 73, Indonesia, lusianakusumayati@gmail.com
[2] Politeknik Penerbangan Surabaya, Jl. Jemur Andayani I No 73, Indonesia, mitamsukma@gmail.com
[3] Politeknik Penerbangan Surabaya, Jl. Jemur Andayani I No 73, Indonesia, fatmawati@poltekbangsby.ac.id
[4] Politeknik Penerbangan Surabaya, Jl. Jemur Andayani I No 73, Indonesia, dimasaryasf@poltekbangsby.ac.id
[5] Politeknik Penerbangan Surabaya, Jl. Jemur Andayani I No 73, Indonesia, faoyan_agusfuryanto@dephub.go.id

DOI : https://doi.org/10.21107/pamator.v18i4a.32853

Manuscript received 12 October 2025, Revised 16 November 2025, Published 11 December 2025

Abstract

This research aims to: 1) analyze the perception of flight instructors regarding the use of artificial intelligence (AI) in English language learning; 2) To explore the experience of aviation cadets in using AI technology to improve the technical English skills; 3) To identify the benefits felt by flight cadets and instructors in the application of AI in English learning; 4) To explore the challenges faced by aviation instructors and cadets in the implementation of AI technology in English language learning, especially in the context of technical and emergency communication in the aviation world. This research was carried out at the Surabaya Civil Aviation Polytechnic from June to July 2024. The subject of this research is the cadets of Air Navigation Engineering of the Surabaya Civil Aviation Polytechnic for the 2024/2025 Academic Year, consisting of 22 cadets. The method used in this study is qualitative research. In collecting data, the authors used interviews, classroom observations, and documentation. The researcher analyzed the data using data reduction, data display, and conclusion drawing. The result of this study showed that AI played a role as a teaching assistant that helped speed up the correction process, provide training, and increase the involvement of cadets in the learning process. It is expected to provide input for the use of Artificial Intelligence (AI) in English learning, especially improving speaking skills for Air Navigation Engineering cadets of the Surabaya Aviation Polytechnic, and to arouse enthusiasm for lecturers to improve and improve the quality of the learning process.

Keywords*:* Artificial Intelligence, English Learning, Qualitative Research, Aviation English, English Specific Purposes, Digital era

Attribution-ShareAlike 4.0 International License (CC BY-SA 4.0) (https://creativecommons.org/licenses/by-sa/4.0/) which allows re-distribution and re-use of a licensed work on the conditions that the creator is appropriately credited and that any derivative work is made available under “the same, similar or a compatible license”.

INTRODUCTION

English has become the international language used in the world of aviation, in accordance with the standards set by ICAO (International Civil Aviation Organization). In the aviation industry, clear and effective communication between pilots and Air Traffic Controllers (ATCs) is essential to ensure the safety and smooth operation of flights, especially in international flights. ICAO requires that all communication in international aviation be conducted in English, and this makes adequate English language proficiency one of the key requirements for aviation professionals. However, although many aviation education institutions in Indonesia already offer English language training, the problem that arises is that many aviation cadets struggle to achieve a level of English proficiency that suits the needs of the industry. One of the reasons is that conventional learning methods are not able to accommodate individual learning needs, as well as limited time and space to practice intensively. For this reason, a new approach is needed in learning English[1], especially for aviation technical communication, which is relevant to the demands of globalization in the aviation world.

The aviation industry demands high English language skills, particularly in terms of technical communication and emergency communication. This is because in many countries, English is the only language used for international interaction, both between pilots and ATCs and between airlines and international passengers. Based on the ICAO Language Proficiency Requirements (2011), all flight personnel involved in communications must have English proficiency at least level 4 out of the available scale of 6. This command of English is also important for the fluency in briefing, debriefing, and delivering important information during flights, which has the potential to improve flight safety. In this context, technical communication skills in English are not only needed to speak, but also to compile reports, use English instruction-based navigation systems, and communicate effectively in stressful situations.

However, currently in Indonesia, many aviation college graduates still do not reach the level of competence expected by the industry. This shows that existing English teaching methods need to be updated to be more effective, especially in preparing aviation cadets to meet the demands of global communication in the world of aviation. One solution that can help overcome this challenge is the application of artificial intelligence (AI) in English language learning. Gen Z, which is a generation group born between 1997 and 2012, is highly exposed to digital technology. They grow up in a highly digitally connected environment and prefer the use of technology to support their daily activities, including learning. AI can provide more adaptive and interactive solutions, according to the characteristics of Gen Z who tend to prefer to learn through technology and applications that can adapt to their needs in real-time[2],[3]. To face this challenges, can be solved by the use of AI in teaching and learning process.

---

[1] Helen Crompton Adam Neenaz Ichaporia Edmett, 'Goes Artificial Intelligence and English Language Teaching : A Systematic Literature Review 1 About the British Council'.

[2] Aymane Ezzaim and others, 'AI-Based Learning Style Detection in Adaptive Learning Systems: A Systematic Literature Review', *Journal of Computers in Education*, 12.3 (2025), 731–69 <https://doi.org/10.1007/s40692-024-00328-9>.

[3] Sarah Chardonnens, 'Adapting Educational Practices for Generation Z: Integrating Metacognitive Strategies and Artificial Intelligence', *Frontiers in Education*, 10 (2025) <https://doi.org/10.3389/feduc.2025.1504726>.

The use of AI in English learning can create a more immersive experience, where Gen Z can learn anytime and anywhere through AI-based apps or platforms. The use of AI is becoming popular in language teaching because it can improve students' speaking and pronunciation[4]. AI creates conducive learning environment by providing personalized environment where learners can adjust their current English proficiency level, vocational needs, or interests. AI technology can also offer immediate feedback, task difficulty setting based on individual abilities that allow cadets to practice technical communication in a more real-world context[5]. In addition, natural language processing (NLP) technology in AI-based applications can provide automated assessments of speaking and listening skills, provide suggestions for improvement, and personalize training materials according to the cadet's ability level[6]. This greatly supports the learning of technical English which demands speed and precision in communication. As the use of technology in learning increases, especially among Gen Z, this study aims to delve deeper into the application of AI technology in English learning for aviation, as well as see how this technology can support more effective learning and relevant to the demands of the global aviation industry.

This research is very important to conduct considering the gap between the English language skills expected by the aviation industry and the English language skills possessed by aviation cadets in Indonesia. The application of AI in English learning has the potential to be a solution to this problem. Not only does AI allow for more flexible and personalized learning, but it can also provide opportunities for cadets to practice in real-world situations through technology-based simulations. It is hoped that this research will make an important contribution to the development of the aviation education curriculum in Indonesia, which increasingly needs innovation in learning methods to prepare graduates who are competent and ready to face the demands of the global aviation industry. In this context, the use of AI in English language learning will not only provide practical benefits for aviation cadets, but will also make a theoretical contribution to the development of technology-based learning in English language education in aviation.

Despites the advantages, some researcher claims that AI has some limitations, like it focuses more on grammar and vocabulary and neglects the social and cultural aspects of language acquisition. It supports a research discussion stated by The role of AI in the teaching and learning process is not to replace the teacher/lecturer. To make AI tools effectively integrated in the teaching and learning process, educators must be equipped with the necessary training. The implementation of AI in the teaching and learning

[4] Omar Ali Al-Smadi and others, 'Artificial Intelligence for English Language Learning and Teaching: Advancing Sustainable Development Goals', *Journal of Language Teaching and Research*, 15.6 (2024), 1835–44 <https://doi.org/10.17507/jltr.1506.09>.

[5] Robert A. Sottilare, 'Examining the Role of Knowledge Management in Adaptive Military Training Systems', 2024, pp. 300–313 <https://doi.org/10.1007/978-3-031-60609-0_22>.

[6] Mohamed Sayed Abdellatif and others, 'I Am All Ears: Listening Exams with AI and Its Traces on Foreign Language Learners' Mindsets, Self-Competence, Resilience, and Listening Improvement', *Language Testing in Asia*, 14.1 (2024), 54 <https://doi.org/10.1186/s40468-024-00329-6>.

process can be successful depending on teachers' perceptions, readiness, and instructional practices[7]. By conducting this study, the result can be used to demonstrates the urgency and relevance of the use of AI technology in aviation education in Indonesia, especially in improving technical English skills that are urgently needed by cadets to meet international standards in the aviation world.

RESEARCH METHODS

This qualitative research follows a procedure designed to dig into the in-depth experiences of aviation instructors and cadets related to the application of artificial intelligence (AI) in aviation English learning[8]. The subjects in this study are lecturers and cadets of the Air Navigation Engineering study program of the Surabaya Aviation Polytechnic for the 2025/2026 Academic Year. The selection of subjects in this study uses purposive sampling, the research subjects are deliberately selected based on certain characteristics that are relevant to the research objectives. The selection of subjects is made with consideration of their experience in using or teaching AI-based learning, as well as their ability to provide relevant information. The location of the research to be carried out is the Surabaya Aviation Polytechnic at Jalan Jemur Andayani I no 73, Siwalankerto, Wonocolo, Surabaya.

The data collection procedure in this study involved several techniques used in qualitative research, namely:

a) In-Depth Interviews

Semi-structured interviews will be conducted with the instructor and flight cadets. This interview is intended to explore their perceptions, experiences, challenges, as well as their views on the use of AI in English learning for aviation. Interviews will be conducted in person (face-to-face) or using online platforms, according to the convenience and location of the participants.

b) Participatory Observation

The researcher will make observations in the classroom or virtual learning environment where AI is applied. Observations will focus on how the interaction between cadets and AI technology takes place, as well as how effective AI is in improving technical English comprehension in the context of aviation. These observations help to obtain contextual data on the application of technology.

c) Documentation

Documentation will include AI-based teaching materials, program evaluation notes, and reports of learning activities conducted by flight instructors. This data will provide deeper insights into the structure and content of AI-based learning, as well as the successes and challenges faced in its implementation.

[7] Ahmed Mehdaoui, 'Unveiling Barriers and Challenges of AI Technology Integration in Education: Assessing Teachers' Perceptions, Readiness and Anticipated Resistance', *Futurity Education*, 4.4 (2024), 95–108 <https://doi.org/10.57125/FED.2024.12.25.06>.

[8] Weng Marc Lim, 'What Is Qualitative Research? An Overview and Guidelines', *Australasian Marketing Journal*, 33.2 (2025), 199–229 <https://doi.org/10.1177/14413582241264619>.

In this study, data analysis uses a thematic analysis approach that allows researchers to identify themes that appear in qualitative data. Data analysis techniques in this research can be carried out in the following way:

a. Data Reduction After obtaining data, the next stage is analyzing the data through data reduction, reducing the data, which is summarizing, selecting and sorting the main things, focusing on the important things that are important to look for in the theme and pattern.
b. Data Display (Data Presentation) In the presentation of data that is most often used in qualitative research is with text that is narrative/wordy and easy to understand.
c. Conclusion Drawing or Verification Next, the researcher makes conclusions based on the data that has been processed through data reduction and data exposure.

To ensure the validity of the data collected, the researcher will use the Triangulation Technique. Researchers will use a variety of data sources, including interviews with instructors and cadets, observations, and documentation, to ensure that the results obtained are more comprehensive and reliable. This triangulation also serves to avoid bias in data collection.

After the data is analyzed, the results of the study will be compiled into a report that presents key findings, thematic findings, and an in-depth analysis of the experiences and perceptions of aviation instructors and cadets regarding the application of AI in technical English learning. The report will also include recommendations for further development in the use of AI in learning in the world of aviation.

RESULT AND DISCUSSION

This section is the most important chapter in the article. The results and discussion section contains at least a description of the findings of the work that discusses its relationship with previous concepts/theories sharply, compares it critically with the work of others, and strengthens ours to correct previous findings. Please highlight the differences between your results or findings and previous publications by other researchers. Data – data that needs to be presented in the form of tables, drawings, sketches, and other illustrations are allowed to be part of the analysis in the article. Presentation of tables, drawings, sketches, and other illustrations is positioned in the middle by providing explanations at the bottom of the table, drawings, sketches, and illustrations. Here is an example of presenting the table in the following article:

This research was carried out in the Air Navigation Engineering study program, Surabaya Aviation Polytechnic, with a focus on analyzing the application of Artificial Intelligence (AI) in English language learning. The respondents of this study consisted of lecturers teaching English courses and 22 level III cadets. Data collection is carried out through: 1) Interviews, to find out perceptions, experiences, and obstacles to the use of AI; 2) Observation, to see the practice of using AI; 3) Documentation, in the form of syllabus, RPS, learning evaluation results, and AI-based learning photos.

Interview Results

1. Lecturer Perception

The results of interviews with lecturers in English courses show that the use of AI is considered a positive breakthrough in the learning process. According to them, AI helps create a dynamic learning atmosphere, where cadets can access language training at any time. Laboratory facilities equipped with computers, headsets, and supporting software are ideal places to integrate AI into learning activities[9].

Lecturers see AI as a medium that is able to enrich teaching materials, present a variety of exercises, and provide quick feedback. In his view, AI is very helpful for creating simulations of communication dialogues in the context of flight that were previously difficult to do manually. The lecturer said that the existence of Brisk Teaching is a quick solution in the preparation of RPS (Semester Learning Plan). Through its AI feature, Brisk Teaching helps produce topic designs, achievement indicators, and assessment rubrics that are in line with the learning outcomes of the study program. This process, which usually takes days, can be completed in a matter of hours, as the AI provides templates that can be instantly customized.

Diffit, on the other hand, is used to design learning materials that are adaptive to the cadets' ability level, including simplifying air navigation technical texts into a more communicative language. With Diffit in making teaching materials, the preparation of teaching materials becomes more efficient. Teaching materials can be made varied without having to recreate the entire content. Diffit allows the conversion of one of these materials into several versions: for skilled cadets, beginners, to practice question formats. Brisk Teaching complements this process by assisting with the preparation of project-based learning activities. This combination ensures that the learning material is not only complete, but also relevant and engaging.

The lecturer stated that Artificial Intelligence (AI), especially applications such as ChatGPT, Gemini AI, Gamma AI, Brisk Teaching and Diffit, helps in enriching the material and improving interaction. According to the opinion of the lecturer: *"AI makes the learning process more interactive, cadets can practice conversations without always having to be face-to-face with me"*. The lecturer emphasized that AI allows the learning process to be more personalized. Cadets can practice outside of lecture hours according to their individual needs, without having to wait for a face-to-face schedule. This is considered to increase *learning autonomy* and provide space for cadets to repeat the material until they become proficient.

AI, such as ChatGPT, is considered effective in improving grammar and suggesting more precise sentence structures, especially in report writing. In addition, lecturers assessed that AI, one of which is Brisk Teaching, helps prepare discussion starter questions and interactive quizzes that are in accordance with the context of the aviation world. This makes learning more lively and encourages active participation of cadets. With the help of Diffit, discussion materials can be enriched with illustrations, infographics, and summaries that make it easier for cadets to understand

[9] Eleni Dimitriadou and Andreas Lanitis, 'A Critical Evaluation, Challenges, and Future Perspectives of Using Artificial Intelligence and Emerging Technologies in Smart Classrooms', *Smart Learning Environments*, 10.1 (2023), 12 <https://doi.org/10.1186/s40561-023-00231-3>.

technical topics in the field of aviation. In terms of assessment, Brisk Teaching offers an automated rubric format to assess cadets' speaking, listening, and writing skills[10]. This rubric can be directly integrated into the campus assessment system. Diffit helps create varied Practice question sheets. Lecturers feel that this system makes evaluation more objective and fast.

The lecturer assessed that the use of AI is relatively easy for cadets to operate, even for those who are not used to it. They also saw an increase in motivation to learn when AI was integrated into the classroom. Cadets, become more active in trying various features and repeating the exercises so that they get satisfactory results.

The lecturer revealed that the use of AI has changed the way learning is designed and carried out. Brisk Teaching helps them design RPS and weekly modules faster, reduces administrative burden, and ensures alignment between learning outcomes and the materials presented. The lecturer said "*Brisk Teaching made me no longer confused about where to start when compiling RPS".* In addition, *Brisk Teaching* helps ensure the schedule of using the lab according to the learning flow, so that the use of facilities is more optimal. *Diffit*, on the other hand, makes it easy to create materials with a variety of language styles and levels of difficulty, making it suitable for classes with diverse capabilities. Diffit's integration with laboratory devices allows for more realistic communication simulations. In addition to the use of these 2 AIs, Gamma AI is also an AI alternative that can be used to create power point slides as teaching materials. With AI, learning preparation can be more efficient and effective.

Lecturers show an open but still selective attitude towards the application of AI. Lecturers welcomed the presence of this technology as a learning innovation but emphasized the need for guidance and supervision so that AI is used appropriately and does not obscure established competency standards. The biggest challenge is getting used to the ever-evolving features of AI. Even so, the majority of lecturers expressed satisfaction because these two platforms helped them focus on interacting with cadets, not just preparing for learning administration.

However, lecturers also expressed concerns regarding cadets' potential dependence on AI. It is possible that cadets only rely on the answers given by AI without understanding the basic concepts behind them. Therefore, the lecturer emphasized that the role of AI should be placed as an aid, not a substitute for the critical thinking process. In class, lecturers usually ask cadets to do the exercises manually before verifying the answers with AI. In addition, lecturers see that the quality of AI answers sometimes does not always match the technical context of the aviation world. For example, AI can provide grammatically correct word equivalents, but it is not in accordance with *ICAO standard phraseology*. In this case, the lecturer plays a role in providing clarification so that cadets understand the difference between general language and flight-specific language.

[10] Michail Fountoulakis, 'Standardizing ESP Pedagogy: A Critical Evaluation of Language Training for Law Enforcement Cadets', *International Journal of Higher Education Pedagogies*, 6.1 (2025), 23–34 <https://doi.org/10.33422/ijhep.v6i1.914>.

Lecturers highlighted the challenges that have arisen, especially internet connectivity issues. AI performance is highly dependent on network stability and connection disruption can hinder the course of the exercise[11]. The availability of adequate devices is an important factor. When the number of cadets exceeds the capacity of the device, they must take turns using computers or personal devices. The lecturer revealed the need for regular maintenance and software updates so that AI performance remains optimal. Lecturers revealed that there is a need for short training for lecturers and cadets so that the use of AI is more effective and efficient. With this training, it is hoped that all parties can make maximum use of AI features according to learning needs.

In general, lecturers' perceptions tend to be positive and support the continuation of AI implementation. They assessed that adequate infrastructure support and good planning, AI can be one of the main pillars in improving the quality of English learning in the Surabaya Aviation Polytechnic.

2. Cadet Perception

Cadets who are research respondents generally have a positive view of the use of AI in English language learning. They feel that AI provides a more interactive learning experience[12]. With the help of apps like ChatGPT or Gemini AI, cadets can practice repeated pronunciation until they reach a level of resemblance to native speakers. Most cadets think AI helps improve English skills, especially in *pronunciation, grammar correction,* and *vocabulary building*. One of the cadets said: *"When I want to practice English, the AI can immediately give corrections and suggestions, so I quickly know where the fault is."*

Some cadets said that AI helps them in overcoming nervousness when speaking English. Training with AI feels safer because corrections are given in person, without embarrassment in front of classmates. They also like the *instant feedback* feature, where errors are instantly notified and corrected in *real-time*. This helps them remember mistakes better. For example, in the application of grammar, cadets find it helpful in understanding grammatical errors and providing alternative suggestions. Some cadets admitted that before there was AI, they had difficulty composing complex sentences, now through AI they can get the right sentence reference for the context of flight.

Thanks to the integration of Gamma, Brisk Teaching and Diffit, cadets feel able to understand technical concepts faster and get access to more personalized materials. However, there are also cadets who feel that sometimes AI gives too complex answers

[11] Jianping Pan and others, 'Network for AI and AI for Network: Challenges and Opportunities for Learning-Oriented Networks', *IEEE Network*, 35.6 (2021), 270–77 <https://doi.org/10.1109/MNET.101.2100118>.

[12] Xinghua Wang, Hui Pang, and others, 'Learners' Perceived AI Presences in AI-Supported Language Learning: A Study of AI as a Humanized Agent from Community of Inquiry', *Computer Assisted Language Learning*, 37.4 (2024), 814–40 <https://doi.org/10.1080/09588221.2022.2056203>.

that are difficult to understand without the guidance of lecturers. At a time when AI provides answers that are difficult to understand because they are too formal or use advanced vocabulary, cadets need explanations from lecturers to adjust to their abilities. The problem of unstable internet networks is also a technical obstacle that is quite disruptive to smooth use.

Cadets consider that AI is an effective learning partner, but not a substitute for direct interaction with lecturers. They feel that the combination of conventional learning and AI technology makes the learning process more varied, practical, and interesting.

Table 1. Interview results

No	Respondent category	Interview Findings	Interview Transcript	Interpretation
1	Lecturer	1. AI helps enrich teaching materials and provides ideas in writing, simulations in speaking and listening exercises and grammar checks	*"AI makes the learning process more interactive. Participants will be able to have a conversation without having to wait for a face to face meeting."*	AI acts as a learning enhancer that is able to provide ideas, present communication scenarios, and correct errors directly (feedback)
		2. AI is a tool that is not a subtitue for lecturers/ face to face learning	*"I emphasize to cadets, AI is a supporter. Manual training should still be done before comparing with AI"*	The role of lecturers remains central in directing the learning process and maintaining competency standards.
		3. AI motivates cadets to practice more actively	*"If we use AI, cadets will feel at home in the lab. They like to try out AI features until the hours run out"*	AI integration can increase student engagement in language labs
		4. There are technical obstacles in the form of internet speed and device limitations	*"If the connection is broken, the training can be lost, sometimes you have to start from scratch."*	Suboptimal infrastructure limits the smooth deployment of AI.
		5. The need for AI use	*"If there is a short training, it will be more effective"*	The technical competence of the user is an important factor in the success of AI implementation.
2	Cadets	1. AI helps increase confidence in speaking	*"If I practice with AI, I am not ashamed if make mistakes. Immediately informed and can be repeated until it is correct."*	AI creates a safe learning environment to make mistakes and correct them directly
		2. AI simplify writing with grammar and vocabulary corrections	*"Before there was Grammarly, I was often confused about making long sentences. There is*	AI helps develop formal writing skills in the context of the aviation world

		now a fitting example for English in the aviation world"	
	3. AI answers are sometimes too formal or too difficult to understand	*"Sometimes the language is too high, so you still need to ask the lecturer to make it clearer*	Cadets still need the role of lecturers as mediators to simplify AI materials

Observation Results

Based on observations during 4 meetings, researchers found that AI is used in various activities such as speaking practice, grammar checking, and listening exercises. In addition to the learning process, lecturers also use AI as a tool in the learning preparation process. AI assists lecturers in preparing RPS and creating learning materials. With the help of AI, more lecturers position AI as an aid, not a substitute for face-to-face learning. Cadets who actively try AI features tend to be more confident in speaking English. Technical obstacles in the form of internet connections and device limitations are still the main obstacles.

1. Artificial Intelligence (AI) is used in the Learning Planning Process

   Artificial Intelligence (AI) is used by lecturers in preparing learning[13]. ChatGPT, Gemini AI, Brisk Teaching, Diffit, can be used to assist lecturers in Preparing Semester Learning Plans (RPS). The Learning Plan is structured and in accordance with the learning outcomes that have been determined. Brisk Teaching is able to organize the learning framework of each meeting. The Brisk Teaching feature can produce a systematic arrangement of learning topics, complete with achievement indicators, teaching methods, and evaluation. Based on the observations, the RPS preparation process using Brisk Teaching produces a material map that makes it easier for lecturers to break down topics into sub-topics. This makes the learning planning process more effective by significantly saving lecturer preparation time. The remaining time can be allocated to develop Diffit-based or other AI-based Exercise materials.

   In addition to RPS, AI is used by lecturers in compiling learning materials. The learning materials prepared consist of learning modules, power point presentations, and interactive exercises. Lecturers use ChatGPT or Gemini AI to create exercise materials or assignments, by integrating with other learning applications such as learning apps or quizzes, the learning materials can be used by cadets during the learning process. Gamma AI is used by lecturers in making power point materials. Diffit and Brisk Teaching play a role in the preparation of adaptive teaching materials, both in terms of language difficulty and the relevance of the aviation context. Based

[13] Akilu Ismail and others, 'Preparing Teachers of the Future in the Era of Artificial Intelligence', *Journal of Artificial Intelligence, Machine Learning and Neural Network*, 44, 2024, 31–41 <https://doi.org/10.55529/jaimlnn.44.31.41>.

on the results of observations, the material produced by lecturers with the help of AI has been proven to use AI as a support for learning activities.

2. Artificial Intelligence (AI) is used in Learning Activities

During the learning process, the integration of Brisk Teaching and Diffit can be seen during the delivery of the material. Brisk Teaching is used to help the learning flow from ice breaking, theoretical explanations, to practice exercises with a maintained rhythm. Meanwhile, the material from Diffit processing was used as a simulation in the language laboratory. In addition to grammar exercises, cadets also practice communication using scripts made using Diffit. Cadets are able to understand instructions faster and rarely experience confusion because the material is tailored to their abilities.

The use of AI in learning in the Air Navigation Engineering class looks varied. Cadets were seen using applications such as ChatGPT for flight scenario-based conversation exercises. To check grammar when writing essays/dialogues, Grammarly is used. AI helps cadets check for errors directly[14]. For example, when cadets write an essay, they upload the text to Grammarly and then provide suggestions for grammar, punctuation, and word choice. Based on observations, some cadets immediately corrected their writings while others recorded mistakes to discuss again with lecturers. The integration of the use of this application shows that AI also plays a role as a real-time feedback provider, not just as a source of material.

Speaking activities are carried out using the role play method. Cadets play the role of technicians who must respond to information from pilots or other air crews. AI is used to simulate the role of a speaking technician in English, complete with accents and vocabulary that correspond to the world of aviation. By using AI, Cadets can practice responding appropriately, as well as improving pronunciation. For listening exercises, AI is used through speech to text features and interactive listening quizzes on online learning platforms. The cadets play audio of the conversation between the pilot and ATC, then the AI helps convert it into text to facilitate the analysis of hearing errors. This method makes cadets more focused on conversation details, such as coordinate numbers, altitudes, and flight technical terms.

During the observation process, lecturers emphasized the position of AI as an aid, not as a substitute for face-to-face learning. Lecturers do not completely leave the learning process to the application, but rather combine the use of AI with direct material explanations. For example, lecturers still provide examples and manual exercises before asking cadets to try to interact with AI. Lecturers ask cadets to first answer questions or complete assignments without the help of AI, then compare them with AI-generated answers. This makes cadets stay active in trying on their own, not only relying on answers from AI. In addition, lecturers also play a role as a guide in the use of AI. When AI gives a response that is not appropriate or too complicated to

[14] Paul Lushenko and Robert Sparrow, 'Artificial Intelligence and U.S. Military Cadets' Attitudes About Future War', *Armed Forces & Society*, 2024 <https://doi.org/10.1177/0095327X241284264>.

understand, the lecturer corrects and explains in a way that is easy for the cadets to understand. During class discussions, AI is used to come up with variations of answers or provide alternative expressions, but the final decision remains in the hands of the lecturer. During learning activities, the role of lecturers remains central as facilitators, evaluators, and guardians of language competency standards, while the role of AI is more about helping to enrich learning resources and speed up the training process.

3. Artificial Intelligence (AI) is used in Learning Evaluation Activities

During learning evaluation, AI is used to generate weekly exam and quiz question formats according to learning objectives. Brisk Teaching is used to produce structured questions with a gradual level of difficulty, starting from term recall to application in the context of aviation. Diffit is also used to create a listening comprehension test with relevant but more concise text, so that cadets can focus on listening and understanding conversation skills. Observation of the results of the cadets' tasks showed an increase in accuracy and agility in responding to questions. Diffit is able to create varied practice question sheets, and even be able to produce listening comprehension questions based on audio simulation. Lecturers feel that this system makes evaluation more objective and fast. In terms of assessment, Brisk Teaching offers an automated rubric format to assess cadets' speaking, listening, and writing skills. Rubrics can be directly integrated into the grading system. Lecturers use the Brisk Teaching analysis feature to readjust the next meeting material based on the weaknesses identified.

Table 4.2. Observation Results Matrix

No	Observation Findings Points	Description of Observation Results	Field Evidence	Interpretation
1	AI is used in various activities (speaking, grammar checking, listening)	Cadets use ChatGPT for conversation practice, Grammarly for grammar improvement, AI is also used in listening exercises through the speech to text	• Photo of cadets interacting with AI in a language lab • Screenshot of Grammarly correction results • Field notes “Cadets looked enthusiastic when the AI gave a pronunciation score	AI serves as a multifunctional tool that supports speech, writing, and listening skills in an integrated manner
2	AI is positioned as a tool, not a substitute for facial tattoos	The lecturer directs the cadets to try to answer without AI first, then compare it with the AI answer.	• Observation Note: lecturer provides manual corrections in the written board • Photo of lecturer giving instructions on the use of AI	The role of lecturers remains central as a director, evaluator, and guardian of aviation technical language standards

3	Cadets who actively use AI look more excited and confident in speaking during the learning process	Cadets who use the AI speech feednack feature show better vocabulary and fluency	• Observation Note: Cadets read text with better pronunciation after AI correction • Documentation: Speaking values before and after AI implementation	The intensity of interaction with AI is directly proportional to the increase in speaking fluency and accuracy of cadets' pronunciation
4	Technical barriers: internet & devices	Internet disruptions cause delays in AI responses, some exercises fail to be saved	• Photos of internet connection disconnected in the lab layer. • Field note: Cadets have to repeat the test due to disconnection	An under-optimal technological infrastructure limits the effectiveness of AI-based learning.
5	AI integration is not yet	AI is not yet listed, in RPS, but it is already used in learning. Cadets also use AI independently outside of the classroom	• Documentation: English Language Learning RPS Document in the Department of Air Navigation Engineering	It can be used as an evaluation material for the preparation of RPS to include AI to follow technological developments in English learning in the classroom

Documentation Results

1. Semester Learning Plan (RPS) document

The results of the identification of the Semester Learning Plan (RPS) document for English courses in the Air Navigation Engineering Study Program show that AI has not been explicitly mentioned in the RPS learning strategy component. Although not formally written, RPS allows space for lecturers to utilize various learning media and technologies. In the "Learning Methods and Media" section, the use of interactive multimedia is listed, which can implicitly include AI technology. This can be a way for lecturers to include AI as an integration in the teaching and learning process in the classroom. The RPS prepared by lecturers lists learning achievements that are in accordance with the benefits of using AI, such as the ability to respond to instructions in English appropriately and the ability to compose essays with the right format and grammar. This goal can be achieved by optimizing the use of AI for dialogue exercises and Grammarly for grammar checking.

The absence of explicit inclusion of AI in RPS can be interpreted as both an opportunity and a challenge. The opportunity is the flexibility of lecturers to innovate, while the challenge is the absence of uniform official guidelines, which has the potential to cause differences in approach between teachers. The results of the analysis of the RPS document confirm the need for updates or the addition of special clauses related to the use of AI technology so that its use is more structured and standardized in all English courses.

2. Materials prepared by the lecturer

The material prepared by lecturers consists of modules, Power Point presentations, learning videos, and interactive exercises. The material has been adjusted by lecturers for the use of AI as a support for learning activities. For example, in the learning module, there are instructions to direct cadets to try exercises using AI applications. The power point presentation used by the lecturer includes a direct link to AI-based learning resources. This makes it easier for cadets to access additional materials independently outside of lesson hours. In several slides, lecturers also listed examples of prompts that cadets can use to interact with AI. The videos made by lecturers also integrate the use of AI. Lecturers show how to use AI to get hands-on feedback. The use of chatGPT using mobile phones is an alternative to holding conversation sessions on topics discussed with AI. In general, the learning materials prepared by lecturers have accommodated the potential of AI, although they have not fully utilized it as a core part of learning. Further development is needed by designing materials that integrate AI technology from the start, rather than just adding them in the final stages.

3. Cadets' Assignment

The documentation of the results of the cadets' assignments shows an improvement in the quality of language skills, especially in the aspects of *writing* and *speaking scripts*. The researcher looked at the results of the cadets' assignments, for example transcripts of conversations and short essays on topics given by lecturers. From these tasks, it can be seen that in doing writing tasks, cadets use AI such as Grammarly or chatGPT to check the work produced to be more structured and grammatically acceptable. The resulting vocabulary is also more varied.

Based on the conversation script compiled by the cadets with the help of AI, the dialogue composed is more realistic. Alternative phrases are made more concise but according to the standard. Documentation shows that some cadets are still relying on AI excessively. It can be seen that the similarity of writing styles between assignments is still high. This indicates that the answer is an AI answer template. This condition proves that there is still a need for lecturer direction so that AI is used not to replace the thinking process and independent creation of cadets, but to help expand insights and enrich ideas.

In general, the documentation of cadet tasks shows that AI has a positive contribution to improving the quality of tasks made by cadets. However, it should be noted that the use of AI is highly dependent on the level of independence and awareness of learning of cadets.

4.3. Documentation Results Matrix

No	Document Type	Contents of Findings	Proof of Documents	Interpretation
1	**Semester Learning Plan (RPS) Aviation English Course**	The English RPS contains learning outcomes, materials, methods, and	RPS file	AI integration ensures a systematic and industry

		evaluations that refer to KKNI. ChatGPT and Brisk Teaching are used to Compie a sequence of learning activities		
2	**Preparation of Learning Materials**	Diffit is used to create materials with difficulty levels according to the cadets' level. Power point materials were compiled using Brisk and Gamma AI. Brisk Teaching is used to create interactive conversation simulations and exercises. Luvvoice is used to produce listening material.	Presentation slides, audio listening files and print out materials	Brisk Teaching Structuring the material pedagogically, diffit and gamma enriches the content to be more contextual, and visual. Luvvoice guarantees that audio material sounds natural as native
3	**Results of Cadets' Duties**	The cadets' tasks show an increase in the use of vocabulary, sentence structure, and accuracy in communication. Brisk Teaching helps to form a pattern of Structured Practice,	A Letter of Intent to the Task Force	The Combination of Brisk Teachhing and Diffit improves language skills
4	**Learning Evaluation**	Student exercise assignment scores and results show an upward trend after the adoption of AI.	Score recap, lecturer's reflection notes	The used of AI in language learning has a significant positive impact on cadets' learning outcomes

DISCUSSION

Based on the results of observations, interviews, and documentation, the application of artificial intelligence in English learning in the Air Navigation Engineering Study Program has been carried out in a structured and integrated manner in the teaching and learning process. AI is used as a medium for simulating conversations, checking grammar, and creating listening materials. Artificial intelligence (AI) has the potential to assist pupils in many areas, including reading comprehension, vocabulary, pronunciation, and grammar The use of AI in English learning in the classroom seems to foster the

enthusiasm of cadets to try and answer questions or questions from lecturers[15]. Even so, some still need technical assistance to maximize existing AI features.

The results of observations in the classroom show that during the learning process, AI is actively used by cadets to create conversation simulations, audio materials for listening and checking for grammar errors[16]. This proves that the use of AI in the classroom can increase the active involvement of cadets in the learning process. The results of these observations are in line with the lecturer's statement that the use of AI during the learning process is a strategy adopted to improve cadets' speaking skills.

The results of interviews with lecturers revealed a positive view of the use of AI in the classroom. AI is used as a medium that supports the teaching and learning process, not as a substitute for the role of lecturers in the classroom. The lecturer emphasizes his role in validating or adjusting the answers given. The application of AI makes it easier for lecturers to assign assignments and speed up the language feedback process for cadets. Cadets revealed that AI makes them more relaxed and reduces nervousness during speaking practice. They don't need to be afraid of being laughed at by classmates for making mistakes while practicing conversations. In addition, cadets said that the automatic grammar checking feature on essays they made using Grammarly helped speed up assignment improvement. However, cadets admitted that AI assistance is sometimes not in accordance with the context in question, so clarification and examination from lecturers are needed. Cadets also said that the factor that affects the smooth use of AI is the internet connection.

Based on the RPS of existing English courses, the use of AI has not been explicitly planned and documented in the RPS. The application of AI in the classroom can be said to be an innovation or initiation carried out by lecturers. AI is used as a supporting learning medium. The results of the cadets' assignments prove that cadets actively use AI in the learning process. The compatibility of the findings of documentation and observation can be seen from the physical evidence recorded in the cadet's learning product, namely the use of AI in completing cadets' tasks. The cadets' expression that AI helps improve the essays they compose through the use of grammar checkers (Grammarly) strengthens the validation of the findings. It makes writing process becomes easier than before. It proves significant role of AI in enhancing the learners' academic writing skills and writing motivation[17].

In general, the application of AI in English courses is able to improve English skills and speed up the feedback process. The material prepared must be as needed. The feedback

[15] Khushboo Kuddus, 'Artificial Intelligence in Language Learning: Practices and Prospects', in *Advanced Analytics and Deep Learning Models* (Wiley, 2022), pp. 1–17 <https://doi.org/10.1002/9781119792437.ch1>.

[16] Gökhan Demirdöken, 'Artificial Intelligence in Aviation English Testing', *The Literacy Trek*, 10.3 (2024), 362–84 <https://doi.org/10.47216/literacytrek.1556603>.

[17] Cuiping Song and Yanping Song, 'Enhancing Academic Writing Skills and Motivation: Assessing the Efficacy of ChatGPT in AI-Assisted Language Learning for EFL Students', *Frontiers in Psychology*, 14 (2023) <https://doi.org/10.3389/fpsyg.2023.1260843>.

process has become faster, and the material is contextual according to the world of aviation. The success of the implementation still depends on teachers because the role of lecturers is needed in directing and criticizing AI output, in addition to laboratory and classroom infrastructure also supporting the implementation. The future of English learning lies in a collaborative relationship between human teachers and AI[18]. The results of triangulation showed compatibility and corroboration between the three data sources. Field evidence such as RPS, learning materials, and cadets' assignment results prove that the integration of AI in the teaching and learning process in the Air Navigation Engineering study program is running well, supported by adequate facilities, and has a positive impact on the cadets' English skills.

CONCLUSION

Based on the results of qualitative descriptive research conducted through observation, interviews, and documentation, it can be concluded that the implementation of artificial intelligence (AI) in English language learning in the Air Navigation Engineering study program has gone well. Although it has not been integrated into the curriculum, AI has been used for various learning purposes, such as conversation simulation, grammar correction, and direct feedback on cadet tasks.

The results of the triangulation showed that according to the lecturer, AI plays a role as a teaching assistant that helps speed up the correction process, provide training, and increase the involvement of cadets in the learning process. From the cadets' side, it was revealed that this technology makes it easier to train independently with relevant materials. Even so, validation or mentoring by lecturers is needed so that the results obtained are still in accordance with the learning objectives. Documentation such as RPS, learning materials, and the results of cadet assignments prove that although AI has not been explicitly recorded in the learning plan document, it is actively used in the English learning process.

In general, the application of AI in the English learning process has a positive impact on the quality of English learning. Along with the development of science and technology, the integration of AI into the learning process is in line with the needs of the aviation world of work which demands speed, accuracy, and smooth professional communication.

ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to Politeknik Penerbangan Surabaya for providing the facilities and support necessary to conduct this research. We also wish to acknowledge the contributions of our colleagues and participants who generously shared their time and experiences, which greatly enriched this research.

[18] Xinghua Wang, Qian Liu, and others, 'What Matters in AI-Supported Learning: A Study of Human-AI Interactions in Language Learning Using Cluster Analysis and Epistemic Network Analysis', *Computers & Education*, 194 (2023), 104703 <https://doi.org/10.1016/j.compedu.2022.104703>.

BIBLIOGRAPHY

Abdellatif, Mohamed Sayed, Mohammed A. Alshehri, Hamoud A. Alshehri, Waheed Elsayed Hafez, Mona G. Gafar, and Ali Lamouchi, 'I Am All Ears: Listening Exams with AI and Its Traces on Foreign Language Learners' Mindsets, Self-Competence, Resilience, and Listening Improvement', *Language Testing in Asia*, 14.1 (2024), 54 <https://doi.org/10.1186/s40468-024-00329-6>

Al-Smadi, Omar Ali, Radzuwan Ab Rashid, Hadeel Saad, Yousef Houssni Zrekat, Siti Soraya Lin Abdullah Kamal, and Gaforov Ikboljon Uktamovich, 'Artificial Intelligence for English Language Learning and Teaching: Advancing Sustainable Development Goals', *Journal of Language Teaching and Research*, 15.6 (2024), 1835–44 <https://doi.org/10.17507/jltr.1506.09>

Chardonnens, Sarah, 'Adapting Educational Practices for Generation Z: Integrating Metacognitive Strategies and Artificial Intelligence', *Frontiers in Education*, 10 (2025) <https://doi.org/10.3389/feduc.2025.1504726>

Demirdöken, Gökhan, 'Artificial Intelligence in Aviation English Testing', *The Literacy Trek*, 10.3 (2024), 362–84 <https://doi.org/10.47216/literacytrek.1556603>

Dimitriadou, Eleni, and Andreas Lanitis, 'A Critical Evaluation, Challenges, and Future Perspectives of Using Artificial Intelligence and Emerging Technologies in Smart Classrooms', *Smart Learning Environments*, 10.1 (2023), 12 <https://doi.org/10.1186/s40561-023-00231-3>

Edmett, Helen Crompton Adam Neenaz Ichaporia, 'Goes Artificial Intelligence and English Language Teaching : A Systematic Literature Review 1 About the British Council'

Ezzaim, Aymane, Aziz Dahbi, Abdelhak Aqqal, and Abdelfatteh Haidine, 'AI-Based Learning Style Detection in Adaptive Learning Systems: A Systematic Literature Review', *Journal of Computers in Education*, 12.3 (2025), 731–69 <https://doi.org/10.1007/s40692-024-00328-9>

Fountoulakis, Michail, 'Standardizing ESP Pedagogy: A Critical Evaluation of Language Training for Law Enforcement Cadets', *International Journal of Higher Education Pedagogies*, 6.1 (2025), 23–34 <https://doi.org/10.33422/ijhep.v6i1.914>

Ismail, Akilu, Abdulrahaman Aliu, Mansur Ibrahim, and Abubakar Sulaiman, 'Preparing Teachers of the Future in the Era of Artificial Intelligence', *Journal of Artificial Intelligence, Machine Learning and Neural Network*, 44, 2024, 31–41 <https://doi.org/10.55529/jaimlnn.44.31.41>

Kuddus, Khushboo, 'Artificial Intelligence in Language Learning: Practices and Prospects', in *Advanced Analytics and Deep Learning Models* (Wiley, 2022), pp. 1–17 <https://doi.org/10.1002/9781119792437.ch1>

Lim, Weng Marc, 'What Is Qualitative Research? An Overview and Guidelines', *Australasian Marketing Journal*, 33.2 (2025), 199–229 <https://doi.org/10.1177/14413582241264619>

Lushenko, Paul, and Robert Sparrow, 'Artificial Intelligence and U.S. Military Cadets' Attitudes About Future War', *Armed Forces & Society*, 2024 <https://doi.org/10.1177/0095327X241284264>

Mehdaoui, Ahmed, 'Unveiling Barriers and Challenges of AI Technology Integration in Education: Assessing Teachers' Perceptions, Readiness and Anticipated Resistance', *Futurity Education*, 4.4 (2024), 95–108 <https://doi.org/10.57125/FED.2024.12.25.06>

Pan, Jianping, Lin Cai, Shen Yan, and Xuemin Sherman Shen, 'Network for AI and AI for Network: Challenges and Opportunities for Learning-Oriented Networks', *IEEE Network*, 35.6 (2021), 270–77 <https://doi.org/10.1109/MNET.101.2100118>

Song, Cuiping, and Yanping Song, 'Enhancing Academic Writing Skills and Motivation: Assessing the Efficacy of ChatGPT in AI-Assisted Language Learning for EFL Students', *Frontiers in Psychology*, 14 (2023) <https://doi.org/10.3389/fpsyg.2023.1260843>

Sottilare, Robert A., 'Examining the Role of Knowledge Management in Adaptive Military Training Systems', 2024, pp. 300–313 <https://doi.org/10.1007/978-3-031-60609-0_22>

Wang, Xinghua, Qian Liu, Hui Pang, Seng Chee Tan, Jun Lei, Matthew P. Wallace, and others, 'What Matters in AI-Supported Learning: A Study of Human-AI Interactions in Language Learning Using Cluster Analysis and Epistemic Network Analysis', *Computers & Education*, 194 (2023), 104703 <https://doi.org/10.1016/j.compedu.2022.104703>

Wang, Xinghua, Hui Pang, Matthew P. Wallace, Qiyun Wang, and Wenli Chen, 'Learners' Perceived AI Presences in AI-Supported Language Learning: A Study of AI as a Humanized Agent from Community of Inquiry', *Computer Assisted Language Learning*, 37.4 (2024), 814–40 <https://doi.org/10.1080/09588221.2022.2056203>