

Utilizing Artificial Intelligence as A Pedagogical Tool in English Language Teaching to Foster Students' Oral Communication Proficiency and Critical Thinking Abilities

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ABSTRACT

Technology has rapidly transformed many fields, especially education. Artificial Intelligence (AI) can improve language learning by helping students think critically and communicate more effectively. This study investigated the use of AI-assisted instruction at the State Polytechnic of Malang to enhance students' critical thinking and speaking skills. Using action research, data were collected through interviews, questionnaires, and classroom observations involving 22 financial accounting students. The results showed that AI improved students' performance. The highest scores increased from 80 to 90 across three projects, while the lowest ranged from 70 to 80. AI offers both opportunities and challenges for future English teachers. Educators need to develop technological skills to meet the needs of modern learners who increasingly rely on AI. Otherwise, the teacher's role may diminish as AI advances. Instead of being just a supplementary tool, AI should support interactive, student-centered learning.

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1. Introduction

In today's globalized world, being able to speak and think critically is important for analyzing data, solving problems, and making well-informed decisions in school and at work. AI technologies enable real-time evaluation and customized learning frameworks, thereby introducing a transformative aspect to education [1]. By tailoring instructional materials to each student's needs and preferences, AI encourages self-paced learning, more engagement, and better educational outcomes. Also, its ability to give instant feedback helps teachers focus on specific areas that need more attention, and it also helps students spot and fix misunderstandings right away. All of these changes point to a new way of thinking about education that is more flexible and focused on the needs of the students.

Artificial intelligence (AI) enhances education by facilitating real-time assessment and immediate feedback that fosters learner advancement and tailored instruction, thereby generating personalized and adaptive learning pathways. Despite these benefits, its integration poses significant challenges regarding equity and data privacy, as extensive data collection heightens the risk of security breaches, and unequal access to AI technologies may exacerbate socioeconomic disparities. Also, if people rely too much on standardized AI-driven methods, they may not take into account differences in context and culture, which could make educational practices less inclusive [2].

As EFL learners pursue greater proficiency in linguistics, they are also being pressured to develop higher order cognitive type skills (for example Critical thinking) due to the emergence of globalization of English as the global Lingua Franca [3-4]. However, there are

many barriers to achieving this goal, including but not limited to barriers that are linguistic, cultural diversity and differences in educational background. As such, care must be taken when using AI to teach languages so as to ensure that AI will actually promote critical thinking rather than inhibit it. Students who overly rely on AI for problem-solving and/or content creation may become passive learners and develop a diminished sense of student autonomy. Conversely, effective use of AI tools should not only promote critical thinking but also encourage discussion and exploration of materials beyond rote memory. Therefore, this is particularly pertinent to Indonesia, where there are many differences between the educational backgrounds and access to technology of EFL learners.

Recent research has provided evidence of the importance of a systematic evaluation of artificial intelligence (AI) based language learning programmatic interventions. There is a need for research to assess the effectiveness of AI technologies in enhancing language proficiency by facilitating critical thinking and developing any skills needed for success in an academic or professional context. In addition, this approach to evaluating AI tools will expand access to education and integrate language acquisition with technology, thus preparing students to meet the rigorous academic and professional requirements of today's world. Furthermore, AI tools should be evaluated for how they may enhance language and cognitive abilities in addition to their technical capabilities.

The Help of AI in a Language Oral Communication

Oral communicative competence involves not only grammatically correct speech but also the sociolinguistic and pragmatic knowledge to achieve productive verbal communication. According to [5] this concept of oral communicative competence includes both the sociolinguistic and pragmatic skills necessary for successful and effective verbal communication, as well as pragmatics (i.e., pronunciation, intonation, and fluency); socio-pragmatics (i.e., cultural and adaptive strategies); and linguistic competence (vocabulary and grammatical structure). Thus, the evolution of this concept illustrates a shift from viewing language as a static form of communication to viewing language as a dynamic tool whose use is context-dependent and inextricably linked to the knowledge of the language and to an understanding of how to use it strategically.

Oral communicative competence is critical to successful verbal communication; however, language teachers have struggled to help their students develop oral communicative competence [6]. With recent advances in artificial intelligence (AI), traditional teaching methods can be significantly enhanced through the AI-driven provision of systematic practice and continuous, individualized language usage. Through the provision of adaptive, learner-centered education, you can use AI as a tool to increase your oral communication skills [7].

In recent years, there has been an explosion of research on the role of Artificial Intelligence (AI) in transforming how language is taught, particularly regarding improving English language learners' oral fluency, pronunciation, and communication skills [8-9]. There are many advanced programs available today, including speech recognition technology and voice assistants, which provide instant personalized feedback and facilitate collaborative learning environments. As noted by [10-12] literature reviews continue to highlight AI as an area for combining linguistic theory with technological advancement, making it an essential part of the educational landscape [13]. While there has been some critical analysis within the literature regarding the effectiveness of AI in teaching English [14]. It is essential to continue critically evaluating the effectiveness of AI in teaching English. Overall, the relationships between AI and language instruction represent an evolving field that will require additional empirical research and critical evaluation.

Critical Thinking: Conceptual Perspectives

It is generally recognized that critical thinking is a complex and very dimensional construct, which includes analytical thinking, evaluation and analyzing, synthesizing, and problem solving, but it is still equally diverse in terms of how it is defined and there is no uniform theory [15-16]. Students agree that critical thinking requires a systematic analysis of the problem, an understanding of the larger context of the problem, evaluation of the data or evidence related to the problem, and creation of sound, well-reasoned conclusions. Skepticism about what is considered "right" and questioning what constitutes a "norm" are two key strategies used by critical thinkers in their pursuit of intellectual engagement [17].

The use of artificial intelligence (AI), especially natural language processing (NLP), has incentivized the development of critical thinking within higher education. Through the use of NLP, researchers are provided with additional rigor regarding methodology because AIs can process various linguistic structures to facilitate literature reviews and identify themes, gaps in the research, and trends in the literature [18-19]. AIs can do this by automating repetitive processes and instead allow researchers to spend more time working with higher-order thinking skills, such as creating hypotheses and interpreting data in a more sophisticated manner. In addition to methodological improvements, AIs provide epistemological benefits because they enable skepticism, question established paradigms, and encourage new ideas in pedagogy and research [3,20-21]. Nevertheless, students caution that AI's potential is tempered by methodological and epistemological constraints. Notably, algorithmic biases may create intellectual "echo chambers" that restrict diversity of thought and limit the scope of critical inquiry [22-23]. This duality positions AI as both an enabler of deeper critical engagement and a source of potential epistemic narrowing, underscoring the need for ongoing critical evaluation of its role in knowledge production.

2. Method

Materials and Methods

Classroom Action Research (CAR) is a method of reflection about how to systematically improve one's teaching by completing professionally identified modes of intervention. It is also seen as an important research paradigm that enhances the overall quality of research and learning outcomes [24]. This research used the CAR methodology to improve the English-speaking ability of students in the third semester of the Finance program at the State Polytechnic of Malang in the 2024-2025 academic year. The CAR-based intervention developed the students' language through case-based learning, which utilized an artificial intelligence (AI) interactive platform. The study used a cyclical approach (planning, action, observation, and reflection) to allow researchers to critically review their teaching practices. The overall goal of the study was to identify structured, reflective pedagogical interventions that would lead to the development of both critical thinking and oral communication skills in students.

Participants and the Research Environment

This study involved 22 students from the D4 Finance Program at the State Polytechnic of Malang, where English is integrated into coursework. Data were collected through multiple instruments, including speaking assessments and observation forms, designed to capture diverse aspects of the learning process. Speaking evaluations, supported by AI-based technology, assessed students' oral communication and critical thinking within case-based learning activities, enabling an authentic appraisal of natural language use and interaction.

Data Collection Technique

$$\bar{x} = \frac{\sum x}{N}$$

X = mean

X = score

X = sum or add N = Subject

$$T - test = \frac{ID}{4N - 1}$$

A T-test was conducted to determine whether significant differences existed between the pre- and post-intervention performance of third-semester Finance Program students at the State Polytechnic of Malang.

Methods of Data Analysis

The impact of AI technology on third-semester Finance Program students at the State Polytechnic of Malang was assessed using a mixed-methods approach. Speaking performance was quantitatively analyzed using a paired-samples T-test and descriptive statistical techniques, which yielded numerical representations of oral proficiency and revealed performance trends. Data reduction, visualization, and thematic analysis were used to qualitatively analyze case-based learning experiences with AI, providing insights into teaching methods and classroom dynamics. A thorough grasp of students' performance outcomes and the pedagogical processes influenced by AI technology was made possible by combining the two approaches.

3. Results and Discussion

Studies have looked at how case-based learning and project-based learning exercises can assist in the development of speaking skills and critical thinking skills when integrating AI into language instruction. These types of activities allow students to gather relevant information and apply language skills necessary for critical thinking and effective oral communication. AI is an important aspect of classroom practice by providing a variety of types of feedback, with AI-generated feedback having particular value in addressing the metalinguistic aspects of students' performance. By assisting students in developing a deeper understanding of linguistic subtleties, this type of feedback fosters motivation and long-term engagement in the process of developing proficiency in language. When combined with project-based learning, case-based learning, oral feedback, and AI-mediated feedback, an informal assessment framework can help teachers more effectively promote speaking ability and language development, as well as overall student achievement.

With AI's ability to give students immediate, real-time feedback for pronunciation mistakes, increasing their vocabulary, and enhancing their oral presentation skills, it immediately allows students to correct incorrect pronunciation quickly. AI assists students in detecting grammatical mistakes promptly by providing them with real-time access to learning about the proper way to use and structure language while supporting critical thinking.

Table 1. Comparison of the students' project evaluation scores

	Evaluation on Project 1	Evaluation on Project 2	Evaluation on Project 3
Lowest Score	70	80	80
Highest Score	80	85	90
Number of students	22	22	22

Below are the averages of the student scores.

$$Xp1 = \frac{1.661 \times 100\%}{22} = 75,5$$

$$Xp2 = \frac{1.810 \times 100\%}{22} = 82,27$$

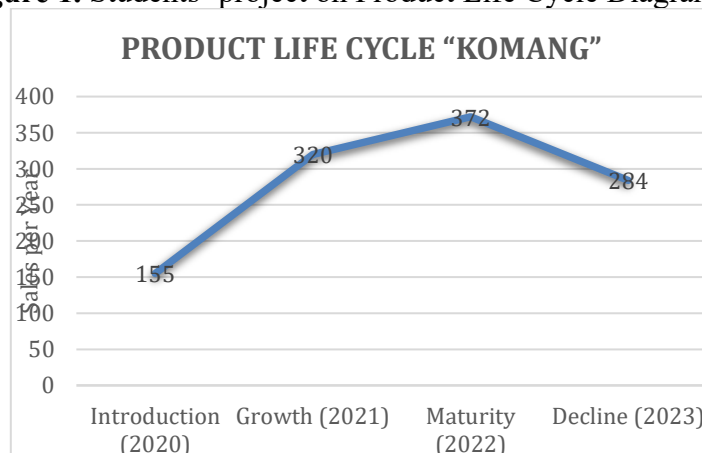
$$Xp3 = \frac{1.922 \times 100\%}{22} = 87,36$$

The examination findings show that most students understand how to speak well enough to reach satisfactory speaking proficiency, with many of them achieving competent performance. Generally, the overall findings reflect positive results indicating that the majority of learners demonstrate sufficient oral communication proficiency. In spite of this, there were also some students who performed exceptionally well and demonstrated high levels of language proficiency and fluency as evidenced by their use of spoken language. These students acted as examples of how successful verbal communication can be achieved by continuing to develop skills through regular practice.

To determine student speaking proficiency, each student completed a project that was designed to assess the student's oral communication proficiency. The project provided evidence of the student's language use in a real-life situation and provided the teacher with data to assess a student speaking proficiency. The assessment process provided many different dimensions to the assessment including: pronunciation; fluency; the words used to complete a sentence; and how the sentences are logically structured into a coherent paragraph, thus giving the teacher insight into the student speaking performance from all of these different dimensions in order to provide feedback for continued improvement. Also, both students' speaking assessment and students' critical thinking assessment are all based on the same AI created analysis which provides educators with direct evidence of the student's use of spoken language and will help inform future teaching approaches and create additional support systems to help students learn more effectively.

Results of the students' project, which required conducting a coffee shop. A survey to collect data on business operations.

Figure 1. Students' project on Product Life Cycle Diagram



Students' project report. An analysis of students' project outcomes and corresponding product life cycle descriptions following consultation and feedback facilitated through

Artificial Intelligence (AI). The stages in the product life cycle consist of 4 stages, namely introduction, growth, maturity, and retirement.

Table 2. Comparison of Students' Sentence Construction with AI Consultation

Students' work	The improvement of students' sentences construction toward more academic appropriate and grammatically accurate forms after engaging in consultations with Artificial Intelligence (AI).
a. Introduction stage At this stage, sales growth is slow because the product has just been introduced to the public. Production costs are very high including promotional and other cost.	a. Introduction stage During the introduction stage, sales growth remains minimal as the product has only recently been presented in the market. Production costs include characteristically elevated, encompassing substantial expenditures on promotional activities, distribution channels, and market penetration strategies.
Points to be considered: • Comma splice in the second sentence • Imprecise phrasing (and other cost) • Lack of parallelism in structure	
b. Growth stage At this stage the product being sold is starting to be recognized and accepted among by consumers so that sales roar and sales generate large profits.	b. Growth stage In the growth stage, the product gains significant recognition and acceptance which consequently leads to substantial acceleration and marked profit generation.
Points to be considered: • Missing a comma after the introductory phrase • Redunt construction (the product being sold) • Informal conjunction (so that) • Imprecise terminology (large profits)	
c. Maturity stage At this stage, sales growth tends to be slow because the product has been accepted and recognized by the market. The profits generated begin to stabilize or tend to decline due to new competitors due to producing the same product.	c. Maturity stage During the maturity stage, sales growth tends to be slow because the product has already achieved widespread market recognition and acceptance. Profit margins typically stabilize or gradually diminishing market saturation and the emergence of competitive alternatives with similar value propositions.
Points to be considered: • Reversed logical order (accepted and recognized vs. earlier recognized and accepted) • Repetitive wording (tends to be and tend to decline) • Imprecise description of competition (producing the same product)	
d. Decline stage At this stage, sales have decreased followed by a decrease in profits earned. This can be caused by several factors such as consumer saturation or consumers this, starting to switch to different products.	d. Decline stage The decline stage manifests through a progressive reduction in sales volume, accompanied by a corresponding diminishment in profitability. Multiple factors precipitate decline, including market saturation, technological obsolescence, and consumers migration toward alternative products or services. The erroneous substitution of retirement for

	decline represents a departure from standard academic terminology that undermines theoretical coherence. These revised versions maintain the original meaning while employing more precise vocabulary, improve syntactic structures, and appropriate academic tone.
Points to be considered:	
• Awkward construction (sales have decreased followed by) • Repetition (decrease and decreased) • Passive voice (can be caused) • Redundant phrasing (consumers starting to switch)	

Students’ project on SWOT Analysis. SWOT analysis is an analysis based on logic to maximize strengths, opportunities, but on the other hand can minimize weaknesses and threats. This analysis compares the company's external factors (opportunities and threats) with the company's internal factors (strengths and weaknesses). The following is a SWOT analysis on the "KOMANG" brand. Presented below is the students’ project, which was refined and developed through consultations with Artificial Intelligence (AI) technology.

SWOT Analysis: Strategic Organizational Assessment.

The SWOT analytical framework represents a systematic strategic planning methodology predicated upon logical assessment that enables organizations to maximize internal strengths and external opportunities while simultaneously mitigating internal weaknesses and external threats. This comprehensive evaluative approach facilitates strategic decision-making through a comparative examination of organizational endogenous factors (strengths and weaknesses) juxtaposed against exogenous environmental elements (opportunities and threats). The following constitutes a rigorous SWOT analysis of the "KOMANG" brand within its competitive landscape:

Table 3. “Comparison of Students’ SWOT Analysis Before and After AI-Assisted Academic Revision”

Students’ work	The improvement of students’ sentences construction toward more academic appropriate and grammatically accurate forms after engaging in with Artificial Intelligence (AI).
Strengths	Strengths: Internal Competitive Advantages
KOMANG" is a unique product that produces a distinctive taste and aroma different from coffee in general, because it makes from mangoes teen skin extract.	Product Differentiation and Unique value Proposition The "KOMANG" brand has established substantial differentiation through its Innovative formulation incorporating mangos teen. This can seek a competitive pericarp extract, yielding distinctive Advantage for the brand's organoleptic properties specifically, flavor profiles and aromatic compounds that diverge significantly different from conventional coffee products. This uniqueness constitutes a sustainable competitive advantage within the marketplace.
Mangos teen fruit, which is the main ingredient is a fruit that is easy to grow in Indonesia so it is easy to reach suppliers.	* Supply Chain Resilience and Resource Accessibility The primary botanical input, <i>Garcinia Mangostana</i> (mangos teen), demonstrates robust cultivation adaptability throughout Indonesia's agricultural regions, facilitating reliable upstream supply chain integration and strategic supplier relationships.

Coffee is one of the popular drinks in the world	* Market positioning within an Established Consumer Category Coffee products maintain persistent global consumption patterns and cultural significance, providing "KOMANG" with an established market infrastructure and consumer base upon which to build brand equity.
Weaknesses	Weaknesses: Internal Limitations
Medium enterprises (UMKM such as "KOMANG" have limited capital, making it difficult to expand their business.	Capital Constraints and Financial Resource Limitations. As a medium enterprise (UMKM classification) "KOMANG" experiences restricted access to financial capital, thereby constraining potential business expansion initiatives, operational scaling, and strategic investment opportunities.
"KOMANG" must compete with coffee Producers who have greater capital and Resources.	Asymmetric Competitive Dynamics "KOMANG" must navigate competitive environments populated by established entities possessing superior financial resource economies of scale, and market penetration capabilities. The availability of mangos teen fruit
Raw materials depend on the harvest Seasons.	Seasonal Supply Dependencies and Raw Material Vulnerabilities The availability and procurement of the Essential teen pericarp component remains contingent upon seasonal agricultural cycles, potentially introducing supply chain volatility and production inconsistencies.
Opportunities	Opportunities: External Favorable Commodity
Coffee is a much sought-after Beverage in Indonesia and Abroad, thus opening up Opportunities for "Komang" to expand its business. The government has programs that can help UMKM improve production, quality and expand market scope.	Market Expansion Potential and Demand Trajectories Coffee consumption demonstrate consistent domestic and international demand pattern, presenting "KOMANG" with substantial market penetration and geographical expansion Opportunities across multiple consumer Segment
Technological development help the "Komang" industry to market its products online so that the reach of consumers is wider.	Governmental Support Frameworks and Institutional Resources Public sector initiatives designed to strengthen UMKM enterprises provide "Komang" with access to production quality enhancement programs, market development resources, and institute support mechanisms.
	Technological Enablement and Digital Market Penetration: Contemporary technological advancement, particularly in digital commerce communication and communication platforms, facilitate enhanced consumer engagement, expanded market reach, and optimized distribution channels for Komang products.
Threats	Threats
Erratic weather can damage mangos Teen plants and disrupt the supply of raw materials for mangos teen peel coffee.	Climatological Vulnerabilities and Agricultural Disruption Unpredictable meteorological patterns present potential disruptions to mangos teen cultivation, potentially compromising raw material quality, availability, and pricing stability throughout the supply chain. Tight market competition. Market Saturation and Competitive Intensity.
	The coffee product category demonstrates significant competitive density characterized by established market participants, brand loyalty factors, and aggressive marketing strategies that challenge new entrant sustainability.

Pets and diseases that can reduce The quality of mangos teen, thus Affecting the production of mangos teen peel coffee.	Psychopathological and Agricultural Risks Botanical pathogens and agricultural pests pose ongoing threats to mangos teen crop yields and qualities, potentially compromising production consistency and product quality standards of “Komang” offerings.
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After the text has been thoroughly revised to enhance the overall quality of the text, it is essential to employ a more sophisticated vocabulary alongside precise academic terminology. This should be complemented by the use of complex sentence structures, which are characteristic of formal academic discourse, thereby contributing to greater depth and coherence. Maintaining a consistent formal tone throughout the work further strengthens its academic rigor. In addition, all grammatical errors and spelling inaccuracies—particularly the incorrect rendering of “mangosteen”—must be corrected to ensure accuracy and professionalism. Sentences should also be fully developed, well-structured, and exhibit proper parallel construction to achieve clarity and precision. Finally, the analysis can be enriched through more nuanced and exact phrasing, which allows for a deeper and more critical engagement with the subject matter.

To strengthen the academic quality of the writing, it is important to incorporate specialized business terminology that reflects disciplinary expertise while also employing formal discourse markers to ensure logical flow and coherence. Each point should be described in greater depth, providing comprehensive explanations that enhance clarity and demonstrate critical understanding. Furthermore, cohesive thematic connections must be maintained across sections to create a unified and well-structured discussion. Finally, the consistent use of precise language is essential for conveying analytical rigor and reinforcing the students' character of the work.

AI could help students with their studies in a more personalized way. Artificial intelligence (AI) can assist in recognizing the variations in each student's learning style while simultaneously providing learning opportunities that are specific to their individual traits. AI is also capable of producing interesting educational resources that are customized to meet the demands of the students. In this situation, students might receive more individualized attention, which would improve the relevance, effectiveness, and satisfaction of the learning process. AI can also assist educators in applying what they have learned. AI can recognize and assess existing patterns and trends in educational materials and techniques. Equipped with this understanding, more efficient curriculum and student-centered teaching methods can be created.

Identifying students' knowledge gaps and modifying teaching methods to suit their needs may also be made easier by AI. Teachers can thus guarantee that every student receives teaching of the highest caliber. As a result, teachers may provide instruction that is tailored to each student's ability, thereby helping them to improve and accelerate their English language proficiency.

AI has the potential to enhance critical thinking in education by fostering deeper analysis, encouraging intellectual curiosity through prompt engineering, and providing personalized learning experiences. It supports students in developing problem-solving, analytical, and digital literacy skills through iterative questioning, information verification, and efficient research. However, excessive reliance on AI poses risks, including reduced independent thinking, misinformation, and diminished cognitive engagement. To address these challenges, educators should integrate AI literacy into curricula, emphasize questioning and verification, explicitly teach prompting skills, and adopt a balanced approach where AI complements rather than replaces traditional teaching methods.

4. Conclusion

This study's main goal was to provide a thorough grasp of how EFL students improve critical thinking and oral communication from the function of artificial intelligence (AI). Based on the research, EFL students view critical thinking and oral communication as a complex field that includes aspects like assessing evidence, understanding context, and challenging norms. They see how AI may improve a number of critical thinking skills, including academic research, theory analysis, and experimental design. In order to develop strong critical thinking and oral communication abilities in EFL students, a balanced strategy that makes use of AI's potential while being mindful of its limitations is required.

For a more thorough and dependable understanding, future study should include more objective measurements, such observations or psychometric tests, to supplement self-reported data.

Furthermore, researching the educational strategies that can successfully combine AI applications with critical thinking and oral communication abilities may yield insightful information. As a result, this study emphasizes the value of taking a nuanced, balanced approach when using AI to help EFL students develop their critical thinking and oral communication abilities and use it as an oral communication, while also pointing out areas that call for caution and more investigation.

AI presents both opportunities and challenges for aspiring English language instructors. The millennial generation is used to using artificial intelligence (AI) tools for many everyday tasks, including studying English. As a result, in order to meet the needs and preferences of future students for learning English, English teachers are constantly enhancing digital literacy, especially artificial intelligence (AI). Artificial intelligence will someday replace English teachers if they do not continuously improve digital literacy.

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