

THE ROLE OF AI PRACTICE IN ENHANCING VOCATIONAL HIGH SCHOOL EFL LEARNERS' SPEAKING SELF-EFFICACY IN YOGYAKARTA

by

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(Article History: Received:28-02-2026;Reviewed1:20-05-2026;Reviewed2:04-07-2026: Accepted:07-07-2026;Published:10-07-2026).

Abstract:

Research on the use of artificial intelligence (AI) in language learning has grown rapidly in recent years. Most existing studies focus on higher education and involve multiple intervention sessions. However, empirical evidence regarding the impact of a single-session AI-based intervention on students' speaking self-efficacy remains very limited. This study examines how AI-assisted speaking practice affects the speaking self-efficacy of EFL students at a vocational high school in Yogyakarta. Using a one-group pretest-posttest pre-experimental design, the study involved 63 students selected through convenience sampling. Data were collected via a speaking self-efficacy questionnaire administered before and after structured speaking practice sessions using ChatGPT, then analyzed using a paired-sample t-test. The results indicate that students demonstrated high levels of speaking self-efficacy across all four dimensions: linguistic self-efficacy, self-regulatory, delivery, and performance. The most significant improvement occurred in the performance self-efficacy dimension, while the smallest improvement was found in the linguistic dimension. These findings indicate that AI has the potential to boost students' self-efficacy in speaking English and can serve as a valuable tool to support the psychological well-being of EFL learners.

Keywords: Speaking self-efficacy, artificial intelligence, ChatGPT, EFL.

Abstrak:

Penelitian tentang penggunaan kecerdasan buatan (AI) dalam pembelajaran bahasa telah berkembang pesat dalam beberapa tahun terakhir. Sebagian besar studi yang ada berfokus pada pendidikan tinggi dan melibatkan beberapa sesi intervensi. Namun, bukti empiris mengenai dampak intervensi berbasis AI sesi tunggal pada kepercayaan diri berbicara siswa masih sangat terbatas. Studi ini mengkaji bagaimana praktik berbicara dengan bantuan AI memengaruhi efikasi diri berbicara siswa EFL di sekolah menengah kejuruan di Yogyakarta. Menggunakan desain pra-eksperimental pretest-posttest satu kelompok, penelitian ini melibatkan 63 siswa yang dipilih melalui pengambilan sampel kenyamanan. Data dikumpulkan melalui kuesioner efikasi diri berbicara yang diberikan sebelum dan sesudah sesi latihan berbicara terstruktur menggunakan ChatGPT, kemudian dianalisis menggunakan uji-t sampel berpasangan. Hasilnya menunjukkan bahwa siswa menunjukkan tingkat efikasi diri berbicara yang tinggi di keempat dimensi: efikasi diri linguistik, pengaturan diri, penyampaian, dan kinerja. Peningkatan yang paling signifikan terjadi pada dimensi efikasi diri kinerja, sedangkan peningkatan terkecil ditemukan pada dimensi linguistik. Temuan ini menunjukkan bahwa AI memiliki

How to cite this article:

Arafah,A.Z.,& Rahayu,P. (2026). The role of AI practice in enhancing Vocational High School EFL learners' speaking self-efficacy in Yogyakarta. *Premise: Journal of English Education and Applied Linguistics*, 15(2),448-465 <https://doi.org/10.24127/pj.v15i2.15868>

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potensi untuk meningkatkan kepercayaan diri siswa dalam berbicara bahasa Inggris dan dapat berfungsi sebagai alat yang berharga untuk mendukung kesejahteraan psikologis pelajar EFL.

Kata kunci: Berbicara efikasi diri, kecerdasan buatan, ChatGPT, EFL.

INTRODUCTION

The accelerated progress of Artificial Intelligence (AI) technology in recent years has unloaded new outlook to support language learning while enhancing students' psychological readiness to communicate. AI-based tools such as ChatGPT enable students to practice speaking repeatedly, receive immediate feedback, and engage in a low-pressure learning environment Wang & Wen (2025). Furthermore, AI can serve as a learning partner by providing personalized feedback, encouraging independent learning, and supporting the development of students' confidence Ethan Mollick (2024). Several studies have reported that AI-assisted speaking practice can boost students' confidence, reduce fear of negative evaluation, improve speaking fluency through automated feedback, and lower speaking anxiety (Celik et al., 2025; Wang & Wen, 2025; Wibowo et al., 2026). These findings suggest that AI holds potential not only as a technological tool but also as a psychological support mechanism for language learners.

This potential is particularly relevant in the Indonesian context, where psychological barriers remain one of the key factors hindering students' speaking skill development. Anxiety in grammar inaccuracy, concern about negative evaluation, and low self-confidence frequently discourage students from participating in speaking activities (Misdi et al., 2022; Mulyono, 2019). At the same time, self-efficacy plays a significant role in shaping students' motivation, learning engagement, and academic achievement Alemayehu & Chen (2023). Therefore, identifying strategies that can strengthen students' speaking self-efficacy has become an urgent matter to address.

Although the number of studies on AI in language learning continues to grow, previous research still reveals several limitations. First, most studies have been conducted at the higher education level, particularly among university students in East Asian and Middle Eastern countries. Second, many studies have examined the impact of AI through long-term interventions or multiple treatment sessions (Celik et al., 2025; Maharani et al., 2025). Third, existing research has largely focused on the technical effectiveness of AI in improving language skills, while its contribution to students' psychological well-being, particularly speaking self-efficacy, has received limited attention Zhang & Liu (2025). Consequently, empirical evidence

regarding the impact of AI-assisted speaking practice on vocational high school students in Indonesia is still limited.

Consistent with these limitations, most previous studies involved university students as participants, employed multi-session intervention designs (Celik et al., 2025; Maharani et al., 2025b; Wang & Wen, 2025; Yildiz, 2024), and focused on improving speaking ability, speaking fluency, or reducing speaking anxiety (Ahmed Jameel Rahman & Asma Abas Brime, 2025; Yildiz, 2024). Although some studies have also reported improvements in students' confidence and self-efficacy, speaking self-efficacy has yet to become the primary focus of research (Guo & Zheng, 2026; Shinta Yuliantari et.al 2023; Tang et al., 2026). Moreover, the context of vocational high schools particularly in Indonesia remains relatively underexplored.

Three gaps emerge from the literature reviewed above. First, studies involving vocational high school students in Indonesia remain extremely rare. Second, speaking self-efficacy as a psychological construct has rarely been positioned as the primary variable in AI-assisted language learning research. Third, evidence regarding the impact of AI intervention in a single-session format has yet to be established. To address these gaps, this study aims to examine the effect of a single session of AI-based speaking practice on the speaking self-efficacy of vocational high school students in Indonesia.

This study might provide both theoretical and practical significance. Theoretically, this research should further add towards the expanding literature on the psychological role of AI in language learning, particularly in relation to speaking self-efficacy. Practically, it provides preliminary evidence for English language teachers regarding the potential of AI-based speaking practice as an accessible strategy for enhancing students' confidence in speaking English (Ethan Mollick, 2024; Macinska & Vinkler, 2025). The novelty of this study lies in three aspects, its focus on speaking self-efficacy as a psychological dimension of language learning, the use of AI-assisted speaking practice delivered in a single session, and its research context involving vocational high school students in Indonesia.

Findings from previous studies further affirm the demand for research that individually criticize the impact of AI-assisted speaking practice on the speaking self-efficacy of vocational high school students in the Indonesian educational context. Most prior studies involved university students with multi-session intervention designs (Celik et al., 2025; Wang & Wen,

2025; Yildiz, 2024), concentrated on variables such as speaking ability improvement, fluency, or speaking anxiety reduction (Ahmed Jameel Rahman & Asma Abas Brime, 2025; Yildiz, 2024) and had not specifically positioned speaking self-efficacy as the central construct under investigation (Guo & Zheng, 2026; Tang et al., 2026). These limitations collectively reinforce the urgency of a study that places speaking self-efficacy at the center of a single-session design within the Indonesian vocational high school context.

Speaking English requires not merely in their own linguistic competence, but also the students' belief in their capability to communicate effectively. In the EFL context, many students struggle with speaking not merely because of limited vocabulary or grammatical knowledge, but because of low speaking self-efficacy Bandura (1977). Speaking self-efficacy alludes to the students' belief in their ability to successfully execute speaking tasks. Students with high speaking self-efficacy tend to demonstrate greater motivation, higher persistence, stronger willingness to communicate, and better speaking performance (Leeming et al., 2024; Li & Zhang, 2023; Youvalari, 2021) According to Bandura (1977), self-efficacy develops by the way of four main sources: mastery experiences, vicarious experiences, verbal persuasion, and physiological and emotional states.

Based on the research gaps identified above, this study investigates the effect of a single session of AI-based speaking practice on the speaking self-efficacy of vocational high school students in Indonesia by addressing the following research question ***"Does AI-based speaking practice enhance speaking self-efficacy among EFL learners?"*** Drawing on the review of previous studies, the following theoretical hypotheses is proposed: ***AI-based speaking practice significantly improves the speaking self-efficacy of EFL learners.***

METHOD

Design

This research employed a pre-experimental research design (Figure 1), particularly a one-group pretest-posttest approach Campbell et al. (1963). Unlike true experimental designs, this study had no control group. Consequently, only one group of participants engaged in the intervention. This design was selected to assess the changes in students' self-efficacy in speaking before and after undergoing AI-assisted speaking practice in a specific class at the vocational school in Yogyakarta, Indonesia.

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The independent variable (X) in this research was the speaking practice supported by AI, specifically using ChatGPT. In operational terms, this variable described a singular, organized speaking practice session where students engage with ChatGPT to respond to speaking prompts, obtain feedback, and refine their responses through follow-up inquiries. The dependent variable (Y) in this research was the self-efficacy of students in speaking. Operationally, speaking self-efficacy pertained to students' confidence in their capacity to effectively carry out speaking tasks in English. This variable was assessed using a questionnaire on speaking self-efficacy, which was administered prior to and following the intervention.

Figure 1. One Group Pretest-Posttest Research Design

Class	Pre-Test	Treatment	Post-Test
E	O1	X	O2

Explanation:

E= Group experiment

O1 = The pretest administered before the treatment measures students' initial level of speaking self-efficacy.

X = The treatment consists of AI-assisted speaking practice using ChatGPT.

O2 = The posttest administered after the treatment to measure students' speaking self-efficacy following the intervention.

The intervention in this research involved a single structured speaking practice session that utilizes ChatGPT as an AI-based educational tool. During this session, students engaged directly with the AI to enhance their speaking skills, obtained feedback, and responded to follow-up questions aimed at fostering idea development and communication. Once the intervention was concluded, a posttest was given to assess any changes in the students' confidence in speaking. Following this, the data were evaluated using a paired-samples t-test to identify whether there was a statistically significant difference between the pretest and posttest scores.

Participant

Sixty-three male vocational high school (SMK) students in Yogyakarta from two intact classes participated in the research. However, only 57 students were included in the final analysis because six participants submitted incomplete responses. They were all beginner level students who were in grade 10 students majoring in automotive. A convenience sampling was

used to select the participant to ensure ease of access and student availability to participate. Prior to data collection, the researchers obtained approval from the school for this study. Participants received an overview of the study's goals and methods, with an emphasis on the voluntary and confidential nature of their involvement. Given that the participants were high school students, consent was secured from both the school and the appropriate teachers.

Instrument

The primary instrument used in this study was a questionnaire designed to measure students' self-efficacy in speaking English. The selection of this instrument was based on the research focus, which was directed more toward examining changes in students' levels of self-efficacy in speaking English, rather than directly measuring their speaking ability. Therefore, this study did not use tests, interviews, or observations, but relied entirely on the questionnaire as the sole data collection tool. This questionnaire was adapted from Yildiz (2024) and developed based on the speaking self-efficacy framework proposed by Bandura (1977). This instrument was selected because it specifically measures students' Self efficacy in their ability to perform English speaking tasks.

To ensure its suitability for the context of vocational high school (SMK) students in Indonesia, the instrument underwent an adaptation process consisting of three stages. First, the instrument was translated from English into Indonesian to ensure clarity of meaning and ease of understanding for participants. This translation process involved more than just translating word by word, but it also ensured that the meaning of each item remained the same as in the original language, despite any linguistic differences. For example, the statement "When speaking English in the classroom, I can speak fluently" was translated into "Ketika berbicara bahasa Inggris di kelas, saya dapat berbicara dengan lancar." Similarly, the statement "I am not stressed out when speaking English in the classroom" was translated as "Saya tidak merasa tertekan saat berbicara bahasa Inggris di kelas." Vocabulary adjustments were made carefully to remain natural for students without changing the construct being measured.

Second, several items were modified to align with the learning context in Indonesian high schools. For example, the original statement "I actively participate in my speaking course" was adjusted to "Saya aktif berpartisipasi dalam pembelajaran berbicara di kelas" to reflect the formal learning situation in schools. Furthermore, the term "course" was consistently adjusted to "kelas" to better suit the context of secondary education in Indonesia.

Third, the instrument was validated by a PhD holder in the field of English language education to ensure content validity, language clarity, and the relevance of each item to the construct of speaking self-efficacy. This validation process was also aimed at ensuring that each statement was understood by the students according to their developmental level.

The final questionnaire consisted of 15 statements that measured students' self-efficacy in speaking English. This scale included four sub-dimensions: linguistic self-efficacy (five items), self-regulatory efficacy (three items), delivery self-efficacy (three items), and performance self-efficacy (four items). These four sub-dimensions reflected key aspects of speaking ability, such as fluency, pronunciation accuracy, grammar usage, the ability to organize ideas, and self-efficacy in speaking in class. Furthermore, this instrument also covered self-regulation aspects, such as the ability to set goals and evaluate speaking performance, as well as academic aspects related to students' beliefs regarding success in speaking tasks and assessments. Responses to each statement were rated on a scale from 1 to 10, with lower scores indicating lower levels of self-efficacy and higher scores indicating higher levels of Self efficacy. The use of a 10-point scale allows for more sensitive measurement of variations in students' self-efficacy levels.

Data Collection Technique

The data was gathered by administering questionnaires to students both prior to and following the intervention. The survey tool was made available as a [Google Form](#) to facilitate easy access. Students filled out the questionnaires in the classroom, with the researcher's presence to ensure they comprehended the instructions and answered the questions on their own. This approach was intended to uphold uniformity in data collection and reduce possible response bias.

Data analysis technique

The questionnaire used generated quantitative data in the form of numerical scores reflecting students' levels of self-efficacy in speaking. These scores were treated as interval data and served as the basis for statistical analysis. All statistical calculations in this study were performed using Jamovi software version 2.6.

Data analysis included two approaches, descriptive and a paired sample t-test. Descriptive statistics were applied first to summarize students' speaking self-efficacy scores,

including the mean, standard deviation, minimum score, and maximum score. Next, a normality test was conducted to determine whether the data met the requirements for parametric analysis. The test yielded a significant value of 0.106 ($p > 0.05$), indicating that the data were normally distributed.

After the normality assumption was met, a paired samples t-test was conducted to compare students' speaking self-efficacy scores between the pretest and posttest, with the following hypotheses. The statements (H_a) AI-based speaking practice significantly improves EFL learners' speaking self-efficacy. The analysis results revealed a statistically significant improvement from pre-test ($M = 4.83$) to post-test ($M = 7.50$), with a mean difference of 2.67. The t-value of -10.3 ($df = 57$, $p < .001$) indicates that the difference was highly significant.

RESULTS AND DISCUSSION

Results

To answer the first research question "Does AI-based speaking practice enhance speaking Self-Efficacy among EFL learners?", descriptive statistics were first calculated for each dimension of speaking self-efficacy, both before and after the AI-assisted speaking practice. Table 1 presents the mean scores of performance self-efficacy, delivery self-efficacy, self-regulatory efficacy, linguistic self-efficacy at the pretest and posttest stages. In the performance self-efficacy dimension showed an increase from ($M = 4.66$) to ($M = 7.51$), $t(57) = -9.85$, $p < .001$, with a large effect size ($d = -1.29$). The delivery self-efficacy dimension increased from ($M = 5.02$) to ($M = 7.68$), $t(57) = -9.20$, $p < .001$, with a large effect size ($d = -1.21$). A similar trend was observed in the self-efficacy for self-regulatory dimension recorded an average increase from ($M = 4.85$) to ($M = 7.49$), $t(57) = -9.53$, $p < .001$, with a large effect size ($d = -1.25$). Meanwhile, the linguistic self-efficacy dimension, the mean score increased from ($M=4.79$) to ($M=7.33$), $t(57) = -10.50$, $p < .001$, with a large effect size ($d = -1.38$). The highest increase occurred in the performance self-efficacy dimension with an average difference of 2.85, while the lowest increase was recorded in the linguistic self-efficacy dimension with an average difference of 2.54. (see table 1 for the complete result).

Table 1. Paired Samples T-test results by dimension.

Dimension		Pre test Mean	Post test Mean	Mean difference	t	df	p-value	Effect size (cohen's d)
Performance Efficacy	Self	4.66	7.51	2.85	-9.85	57	<.001	-1.29
Delivery Self-Efficacy		5.02	7.68	2.66	-9.20	57	<.001	-1.21
Self-Regulatory Efficacy		4.85	7.49	2.64	-9.53	57	<.001	-1.25
Linguistic Self-Efficacy		4.79	7.33	2.54	-10.5	57	<.001	-1.38
Total		4.83	7.50	2.67	-10.3	57	<.001	-1.35

Statistically, a paired-samples t-test showed that the total post-test scores were significantly higher than pre-test scores $t(57) = -10.3$ $p < .001$. Therefore (H_a), which states that AI-based speaking practice significantly improves EFL learners' speaking self-efficacy, was accepted.

For performance self-efficacy dimension, the highest increase was on the item "*I can understand the most difficult material presented in speaking course*" with a mean difference of 3.20, while the lowest increase was found in the items "*I can do an excellent job on the assignments and tests in the speaking course*" and "*I can receive an excellent grade in speaking course*" with the same mean difference of 2.67. The paired sample t-test on performance self-efficacy (Table 1) indicate a significant difference between pre- and post-test on performance self-efficacy $t(57) = -9.85$, $p < .001$.

Table 2. Performance self-efficacy dimension

Questionnaire Items	Pre-test	Post-test	Mean Difference
<i>I can understand the most difficult material presented in speaking course.</i>	4.47	7.67	3.2
<i>I can do an excellent job on the assignments and tests in the speaking course.</i>	4.75	7.42	2.67
<i>Considering the difficulty of the speaking course, the teacher, and my skill, I think I can do well in this class.</i>	4.76	7.52	2.76
<i>I can receive an excellent grade in speaking course.</i>	4.73	7.40	2.67

The increase on delivery self-efficacy dimension, the highest increase was found in the item "*I enjoy speaking English outside the classroom*" with a mean difference of 2.96, while the lowest increase was found in the item "*When speaking English in the classroom, I can speak with confidence*" with a mean difference of 2.42. The paired sample t-test on delivery speaking

self-efficacy (Table 1) indicate a significant difference between pre- and post-test on delivery speaking self-efficacy $t(57) = -9.20, p < .001$.

Table 3. Delivery self-efficacy dimension

Questionnaire Items	Pre-test	Post-test	Mean Difference
<i>When speaking English in the classroom, I can speak with confidence.</i>	5.25	7.67	2.42
<i>I am not stressed out when speaking English in the classroom.</i>	5.30	7.79	2.49
<i>I enjoy speaking English outside the classroom.</i>	4.63	7.59	2.96

In Self-regulatory efficacy dimension, the highest increase was found in the item “*I actively participate in my speaking course to improve my speaking*” with a mean difference of 2.69, while the lowest increase was found in the item “*When speaking English in the classroom, I can think of my goals before speaking*” with a mean difference of 2.55. The paired sample t-test on Self-regulatory efficacy, (Table 1) indicate a significant difference between pre- and post-test on Self-regulatory efficacy $t(57) = -9.53, p < .001$.

Table 4. Self-regulatory efficacy dimension

Questionnaire Items	Pre-test	Post-test	Mean Difference
<i>I actively participate in my speaking course to improve my speaking</i>	4.68	7.37	2.69
<i>When speaking English in the classroom, I can think of my goals before speaking.</i>	5.02	7.57	2.55
<i>When speaking English in the classroom, I can evaluate whether I achieve my goal in speaking.</i>	4.89	7.50	2.61

Within the linguistic self-efficacy dimension, the greatest increase was observed in the item “*When speaking English in the classroom, I can speak with grammatical accuracy*” with a mean difference of 2.76, while the lowest increase was found in the item “*When speaking English in the classroom, I can speak fluently*” resulting in mean difference of 2.35. The paired sample t-test on linguistic self-efficacy (Table 1) indicates a significant difference between pre- and post-test on speaking self-efficacy $t(57) = -10.5, p < .001$.

Table 5. linguistic self-efficacy dimension

Questionnaire Items	Pre-test	Post-test	Mean Difference
<i>When speaking English in the classroom, I can speak fluently.</i>	4.93	7.28	2,35
<i>When speaking English in the classroom, I can logically organize my words</i>	4.67	7.24	2,57

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<i>When speaking English in the classroom, I can speak with few pause or filler (i.e., "Um," "Ah," or "You Know").</i>	4.81	7.17	2,36
<i>When speaking English in the classroom, I can speak with grammatical accuracy.</i>	4.71	7.47	2,76
<i>When speaking English in the classroom, I can speak with correct pronunciation, intonation, and liaison.</i>	4.77	7.47	2,7

Discussion

This study was designed to investigate whether AI-based speaking practice could improve speaking self-efficacy among English as a Foreign Language (EFL) learners. The analysis divulged a significant difference between pretest and posttest scores following the AI-assisted speaking session. Based on these findings, (Ha) was accepted indicating that AI-based speaking practice contributed significantly to the improvement of speaking self-efficacy among vocational high school (SMK) students. Overall, improvements were observed across four dimensions: performance self-efficacy, delivery self-efficacy, self-regulatory efficacy, linguistic self-efficacy.

The first finding revealed that, based on the mean difference, the greatest improvement occurred in the dimension of performance self-efficacy, reflecting students' growing self-efficacy in understanding the most challenging material in speaking instruction, as well as in completing speaking tasks. These results support the findings of (Ahmed Jameel Rahman & Asma Abas Brime, 2025; Celik et al., 2025; Yildiz, 2024), who reported that AI-assisted speaking environments can increase student participation and self-efficacy in communication activities. Ethan Mollick (2024) similarly asserts that AI can function as a learning partner that supports independent learning while simultaneously building learner confidence.

What distinguishes this study, however, is its context. It was conducted with Indonesian vocational high school students using a single-session intervention, while most prior studies involved university students with interventions spanning several weeks or multiple sessions (Celik et al., 2025; Maharani et al., 2025; Wang & Wen, 2025; Yildiz, 2024). This contextual difference suggests that improvements in speaking self-efficacy do not necessarily require long-term intervention, and that even a single AI-based session can produce measurable gains in students' speaking self-efficacy Pendidikan & Mataram (2026).

From the perspective of Bandura (1977) self-efficacy theory, these improvements can be attributed to the combination of mastery experiences and verbal persuasion that students received through the AI responses, corrections, and feedback during the practice session. In this regard, AI may pose as not just simply a instrument of technology, but also as a source of psychological support that reinforces students' belief in their capacity to complete speaking tasks Guo & Zheng (2026). Nevertheless, since this study did not incorporate a control group, it cannot be fully established whether the gains in performance self-efficacy were solely attributable to the AI intervention or were also influenced by other factors, such as the novelty effect of using new technology in the classroom Campbell et al. (1963). Chiefly, these findings reveal that a single session of AI-based speaking practice is sufficient to produce meaningful improvements in performance self-efficacy, demonstrating that AI-based interventions can have a significant psychological impact even within a limited timeframe.

The second finding indicated improvements in delivery self-efficacy and self-regulatory efficacy, ranking as the second and third highest increases among all dimensions. The increase in self-regulatory efficacy reflects students' strengthened belief in their ability to manage and plan their own speaking learning process independently. In line with this, the increase in delivery self-efficacy reflects students' growing self-efficacy in conveying messages orally, as such, these two aspects mutually reinforce one another in fostering both learning autonomy and students' self-efficacy in oral communication. This finding is consistent with Alemayehu & Chen (2023), who underscores the imperativeness of self-efficacy in enhancing students' motivation and learning engagement. It also aligns with Macinska & Vinkler (2025), who demonstrated that AI can support independent learning through personalized feedback and real-time evaluation, and with Ethan Mollick (2024), who argues that AI has the potential to encourage students to take greater ownership of their learning process. The comparison of effect sizes shows that the improvements in self-regulatory efficacy and delivery self-efficacy were relatively higher in effect than that of linguistic self-efficacy.

From Bandura (1977) theoretical perspective, self-regulatory efficacy is closely tied to accumulated mastery experiences built consistently over time, meaning that a single intervention session may not be sufficient to establish strong self-regulatory beliefs. This limitation is compounded by the absence of a follow-up phase in research design, leaving open the question of whether the observed gains in self-regulatory efficacy could be sustained or

further developed through a more extended intervention Campbell et al., (1963). It can therefore be concluded that while a single session of AI-based speaking practice produced initial gains in students' self-regulatory efficacy, the development of these dimensions likely requires a longer and more structured intervention to yield more substantial and lasting change.

The third finding shows an increase in the dimensions of linguistic self-efficacy, referring to students' belief in their ability to use grammar, vocabulary, and pronunciation in English communication. A comparison of mean differences shows that the increase in linguistic self-efficacy was less pronounced than in performance, delivery and self-regulatory efficacy. This suggests that while students quickly improved their overall performance and willingness to speak, changes in linguistic beliefs, such as grammar mastery, develop more slowly and require consistent reinforcement. This is supported by Zhang (2024) who noted that developing linguistic strategies in an EFL context requires ongoing exposure. Although the increase was the smallest compared to other dimensions, this finding broadly aligns with (Ahmed Jameel Rahman & Asma Abas Brime, 2025; Celik et al., 2025; Wibowo et al., 2026; Yildiz, 2024) all of whom reported that AI-assisted speaking practice can enhance students' self-efficacy in communicating in English. However, those studies did not specifically differentiate improvements in self-efficacy by linguistic dimension, whereas the present study demonstrates that the changes occurred particularly in students' beliefs regarding their grammatical, lexical, and phonological abilities. This finding also differs from (Li & Zhang, 2023; Wang & Wen, 2025) whose primary outcomes were speaking fluency and accuracy rather than the psychological dimensions underlying language use, further highlighting AI capacity to strengthen not only linguistic performance, but also the psychological beliefs that support it. Theoretically, this finding can be explained through two complementary mechanisms. First, Bandura (1977) argues that mastery experiences are the primary source of self-efficacy development and this is precisely what occurred as students practiced speaking repeatedly and received immediate feedback from the AI, gradually building their linguistic self-efficacy. It should be noted, however, that the improvement in linguistic self-efficacy in this study was measured solely through a self-perception questionnaire rather than a direct speaking performance test, meaning that whether the observed gains in linguistic self-efficacy are reflected in students' actual speaking ability remains uncertain Campbell et al. (1963). Nevertheless, a single session of AI-based speaking practice proved capable of triggering initial

gains in EFL students' linguistic self-efficacy, primarily through the simultaneous operation of mastery experiences and physiological-emotional states reduction during the practice process.

Taken together, this study provides preliminary evidence that AI can be leveraged not only to support language skill development but also to strengthen the psychological dimensions of students' speaking learning (Celik et al., 2025; Wibowo et al., 2026). The improvements in speaking self-efficacy observed in this study are primarily explained through the mechanisms of mastery experiences, verbal persuasion, and physiological-emotional states Bandura (1977). Repeated speaking practice provided students with experiences of success, AI-generated feedback reinforced their beliefs in their own abilities, and the low-pressure learning environment helped reduce speaking anxiety Tang et al. (2026). Vicarious experiences, by contrast, appeared to play a less prominent role, as students interacted individually with AI without observing the performance of their peers Bandura (1977).

Conclusion

This study aims to determine whether speaking practice facilitated by artificial intelligence (AI) can have a positive impact on the speaking self-efficacy of EFL learners. The results of the analysis show a statistically significant difference between students' speaking self-efficacy scores on the pretest and posttest after participating in AI-assisted speaking practice. Based on these findings (H_a) which states the opposite is accepted. These results suggest that AI-assisted speaking practice is closely associated with an increase in students' speaking self-efficacy.

This improvement occurred evenly across all dimensions of speaking self-efficacy, namely linguistic self-efficacy, self-regulation, delivery, and performance. The highest increase occurred in the performance self-efficacy dimension, while the lowest increase was recorded in the linguistic self-efficacy. These findings indicate that practicing speaking through AI can strengthen students' confidence, readiness, and motivation in using English as a communication tool.

From a theoretical perspective, the findings of this study align with Bandura's self-efficacy theory, particularly regarding the role of mastery experiences and physiological-emotional states in shaping students' perceptions of their abilities. The opportunity to practice speaking repeatedly, receive immediate feedback, and learn in a low-pressure environment

appears to foster positive speaking experiences, which ultimately contributes to increased speaking self-efficacy. Furthermore, these findings also underscore that AI goes beyond a technological apparatus, but as a learning partner that supports students' language acquisition and emotional development.

This study provides preliminary evidence that the use of AI in speaking practice has the potential to be an effective learning strategy for building vocational high school students' confidence in speaking English. Therefore, English teachers may consider integrating AI-based speaking activities into the learning process to create more opportunities for students to practice in a safe and supportive environment.

Limitation

This study has several limitations that warrant acknowledgment. First, the use of a pre-experimental design without a control group means that causal relationships cannot be established with full confidence, making it difficult to draw direct conclusions about the effect of the intervention Campbell et al. (1963). Second, the single-session intervention limits this study's ability to determine whether the observed improvements in speaking self-efficacy can be sustained over the long term. Third, data were collected exclusively through a questionnaire, meaning that actual changes in students' speaking ability were not directly measured Leeming et al. (2024). Future research is therefore encouraged to employ experimental designs with control groups, extend the duration of the intervention, and combine self-efficacy measurements with direct assessments of speaking performance, so that the impact of AI-assisted speaking practice on EFL learners can be understood more deeply and comprehensively.

Implication

The results of this study suggest that AI can serve as a valuable aid for practicing English speaking and increase students' self-confidence. Nevertheless, these results should be viewed while keeping in mind several limitations of the study, as it was carried out without a control group, involved just one practice session, and focused on vocational high school students in Yogyakarta. Consequently, future studies are encouraged to adopt a true experimental design that incorporates a control group for comparison, extends the duration of treatment, and utilizes

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various data collection methods to provide more robust evidence regarding the effects of AI on students' self-efficacy and speaking abilities.

ACKNOWLEDGEMENT

The author gratefully acknowledges SMK Negeri 3 Yogyakarta for permission and support in conducting the research. The author would also like to express appreciation to the students, teachers, and school administrators for their cooperation and assistance during this research.

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