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Article

Students' Perception on the Use of AI-based Applications to Practice Pronunciation

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A B S T R A C T

Artificial Intelligence (AI) is now beginning to be integrated into language learning, particularly in pronunciation practice. However, there is a lack of research exploring students' perceptions and challenges in using AI-based applications for pronunciation practice, especially in the context of English as a foreign language (EFL) learning in Indonesia. This study aims to investigate students' perceptions and challenges toward the use of AI-based applications for pronunciation practice by applying the Technology Acceptance Model (TAM) by Davis (1989) and Challenges with the Use of AI in ELT/L framework by Crompton et al. (2024). The research employed a qualitative study with data collection through questionnaires and semi-structured interviews involving 34 English Language Education students. The study found that students view AI-based applications, specifically Google Translate, Elsa Speak and Duolingo, as effective and user-friendly tools that provide personalized feedback, repetitive practice, and flexible learning plans. Apart from that, students also feel that the apps help them to gain a better understanding about important features like consonants, intonation and stress. However, several challenges were identified, including technical problems, recognition errors, privacy concerns, and doubts about the accuracy of feedback. Despite these challenges, AI-based applications show promising potential to support pronunciation learning if there are further improvement to address existing limitations.

Keywords: *Students' Perception, AI-based Applications, Pronunciation*

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INTRODUCTION

Artificial Intelligence (AI) has gotten a lot of recognition as a transformative tool in language learning. As Luckin et al., (2016) emphasized that there are three key advantages of AI in education, such as learner personalization, collaborative learning, and intelligent assessment and feedback. These features are particularly useful in language classrooms, where students often struggle to receive individualized support, especially in environments with large class sizes or limited resources. With these advantages, AI is capable of fulfilling various roles in language learning. It could serves as a personalized tutor that adapts to each learner's needs, a conversation partner that provides interactive speaking practice, and a catalyst for motivation by encouraging consistent engagement and self-directed learning These capabilities are what makes AI to be able to simulate one-on-one tutoring, a method which known to be highly effective in achieving high levels of comprehension and motivation, resulting in more efficient learning progress (Bond et al., 2021). It's also supported by statement from Haristiani, (2019) which stated that the integration of AI in educational setting able to encourage students to be more active in learning progress.

Among the many uses of AI in education, language learning stands out as an area that benefits greatly from the flexibility and interactivity of AI. Pronunciation training has gained increasing attention as AI can offer immediate feedback which difficult to provide in traditional classroom settings. AI can serve as an extremely beneficial tool for second language

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learning in facilitating error correction and improving accuracy in language acquisition (Dodigovic, 2007). In the pronunciation learning, there has been an increase in applications based on artificial intelligence that serve as support tool for practicing pronunciation. These applications are called Mobile-Assisted Language Learning (MALL) which refers to the use of mobile devices such as smartphones as aids in learning languages. Pokrivcakova, (2019) mentioned that AI can have a significant impact and change in the educational environment. As Mobile devices such as smartphones have become an inseparable part of our daily lives, their integration into language learning makes it possible for students to study language learning anytime as they aren't required to be in the classroom alone. Hence, it can provide opportunities for every motivated learner to learn languages anywhere and anytime.

To enable pronunciation learning, AI-based applications adopt advanced technologies such as Automatic Speech Recognition (ASR), Natural Language Processing (NLP), and Machine Learning (ML) technologies are used to process the voice input from students and analyse it to provide feedback on various pronunciation features such as phoneme accuracy, word stress, intonation, and rhythm. Several AI-based applications such as ELSA Speak, Duolingo, Say It, Google Speech Recognition are applications that have been widely used by EFL learners. These applications come with various in-app features designed to support targeted pronunciation practice. One of the most important and definite features is speech analysis which adopts ASR technology. This technology will capture voice input from the learner and will be analysed by comparing it with the pronunciation model of a native-speaker models stored in the app's database. The application will process the voice input that includes pronunciation features, namely segmental and suprasegmental features. Evaluations are often color-coded or score-based, indicating the accuracy of the learner's pronunciation. For example, ELSA Speak and Duolingo provide visual representations that show correctly and incorrectly pronounced phonemes that need to be corrected. These apps also provide pronunciation training through interactive dialog, provide audio playback and comparison features that allow students to compare their pronunciation results with native speaker samples. Additionally, In-app features such as progress tracking, lesson plan suggestions, gamification elements (like badges, scores, and levels), and customized lesson plans help maintain learner engagement and ensure practice is aligned with their proficiency level. These useful and interactive features offer learners a structured lesson plan and an engaging learning environment in their quest to improve their pronunciation competency in an effective and entertaining way.

Given the promising potential of artificial intelligence, numerous studies have been conducted to investigate students' experiences and perceptions in utilizing AI-based application for pronunciation practice. For instance, Pham & Pham, (2025) conducted a study to evaluate English students' satisfaction with using the ELSA Speak app in improving English pronunciation and factor influencing their satisfaction using TAM (Technology Acceptance Model) and ECT (Expectation-Confirmation Theory) frameworks. Their study found that the students' overall satisfaction on using ELSA Speak was high (Mean = 4.112 out of 5). Both of predictors, Ease of use (β = .369) and confirmation (β = .657), were the strongest predictors to influence students' satisfaction, meanwhile perceived usefulness (p = .127) had no direct effect. Therefore, it concludes that 205 English students from a higher education institution in Can Tho, Vietnam were generally satisfied with ELSA Speak as a tool to support learning pronunciation skill. Similarly, Mohammadkarimi (2024), conducted a mixed-methods study to explore how AI-based tools impact students' perception, and pronunciation accuracy after using Listnr and Murf applications. The finding showed that, at least 90% students expressed an improvement in their pronunciation accuracy, confidence in speaking and enjoyment in learning after using the tools. Even though there are some difficulties such as interpreting feedback or technical glitches, integrating AI-based applications could significantly help students in improving their pronunciation with enjoyable learning. In contrast, Gallacher et al. (2018) through qualitative research on 253 Japanese EFL students, revealed low satisfaction with AI chatbots, as students preferred human conversation partners for pronunciation practice due to limited chatbot interactivity. The study revealed that human partner merits has

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outnumbered demerits, meanwhile the demerits of AI partner has significantly outnumbered merits suggesting that the students felt that human partner is better conversational partner to practice their pronunciation. This is because the chatbot used lacks resources that create more interaction when used for practicing. Finally, Dai & Wu (2023) also explored mobile-assisted pronunciation learning through peer feedback and ASR tools. They concluded that combining peer feedback, ASR tools, and instructor feedback was the most effective approach, particularly for lower-performing students, and helped maintain high levels of student satisfaction.

While previous studies provide valuable insights, further research is needed to explore how EFL learners in the Indonesian context perceive and experience the use of AI-based applications for pronunciation training. Based on the previous studies, students' perceptions of AI-based apps are still divided into two parties where some enjoy interacting with AI and some are even burdened when interacting with AI. Therefore, investigating the perception and opinion of Indonesian EFL students regarding the use of AI is still needed as data to help integrate AI technology into the teaching and learning environment. Hence, the purpose of this study is to find out student's perception and challenges after using AI-based applications to practice their pronunciation using Technological Acceptence Model (TAM) by Davis (1989) and Challenges with the Use of AI in ELT/L. Crompton et al. (2024) Framework. This research seeks to answer the following question: (1) How do students perceive their experience on the use of AI-based application to practice pronunciation? (2) What are the challenges that arise when students using AI-based application to practice pronunciation?

METHOD

This research used qualitative method to investigate the research problems. According to Gupta (2011), qualitative methods are studies based on the process of understanding social problems from various participant perspectives. In line with that statement, Goundar (2012), the goal of qualitative methods is to explain and describe a situation by conducting observations or interviews by considering various perspectives from different people about a phenomenon that involves a quality. Therefore, a qualitative method that conducts an in-depth analysis of information to find out about the attitudes, feelings, experiences and opinions of EFL students regarding the use of artificial intelligence to help them improve their pronunciation skills.

Respondents

The subject of this research were 34 undergraduate English Language education students at Universitas Negeri Semarang. The participants were selected using purposive sampling in order to meet the research criteria. They were chosen because English language education students have to go through a class that focuses on pronunciation practice class in the first semester. As a results, EFL students at UNNES have been introduced to various digital tools that can help with pronunciation practice both within and outside of the classroom setting.

Data Collection

In the process of data collection, questionnaires and semi-structured interviews were conducted. EFL students who have been confirmed to have used or are currently using AI-based applications as a medium to practice their pronunciation skills were asked questions about their feelings, perceptions, experiences, or complaints in using AI-based applications. First, questionnaires were conducted to know general perceptions of the students toward the research problems. The questionnaire contains questions that are necessary and desirable for the researcher. The researcher prepared 16 items of structured questions that distributed to participants using the google form website. A four-point Likert scale was used with options ranging from strongly agree, indicating a very positive perception, to strongly disagree, indicating a very negative perception. A four-point Likert scale usually used to make sure that respondents show their attitude toward the problems. To complement the previous method, the researcher conducted a semi-structured interviews involving selected participants.

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Interview sessions were held flexibly either face-to-face or via online based on the participants' willingness in order to not burden the participants so as to get factual and genuine data. This method allowed participants to add additional information or provide more in-depth answers based on the interview session. This way students could provide more flexible opportunities to share and clarify their perceptions and experiences in more detail to help this study.

Data Analysis

After the data was collected, the researcher would analyse the data to discover whether the research problems answered could be answered. To analyse the questionnaire data, descriptive stastical analysis was conducted using SPSS 26 to summarize frequencies, percentages, and mean score of the students responses. This descriptive analyse provided an overview related students' perception on the research problems. In addition, the qualitative data obtained from participants interview were used to support and clarify the pattern that have been observed in the descriptive statistics, allowing a deeper understanding toward students' perceptions.

FINDINGS AND DISCUSSION

After conducting the data collection, the data were transcribed, reduced, analyzed using descriptive statistics in the form of percentages. Before determining the students' perceptions, it was important to indentify which applications the participants had used. To provides this information, the various AI-based applications that commonly used by students are presented below.

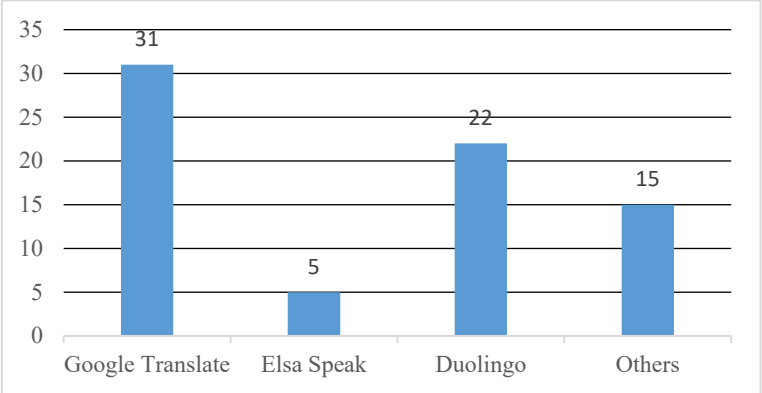

Figure 1. AI-based Application Used by Students

As shown in Figure 1, Google Translate was the most frequently used application, with 31 participants (91.2%) using it. This was followed by Duolingo, with 22 participants (64.7%) using it, while only 5 participants (14.7%) stated using ELSA Speak. Additionally, 15 participants (44.1%) stated that they had used various other AI-based applications outside the main options. This indicates that the majority of participants have used or are currently using more than one AI-based application to support their pronunciation practice.

Perceived Usefulness

The table below presents students' evaluations of how useful they find AI-based applications. It's focus on whether these tools help improve pronunciation, provide constructive feedback, offer repeated practice, and support personalized learning plans.

Table 1. Result of Perceived Usefulness

No	Statements	Categories	SA	A	D	SD
1	Using AI-based pronunciation apps helps me improve my English pronunciation.	Perceived Usefulness (PU)	44%	56%	0%	0%
2	I get useful feedback from AI-based apps that helps me correct my pronunciation while practicing.		32%	59%	6%	3%
3	Using AI-based apps allows me to repeat pronunciation exercises as many times as I need.		53%	44%	3%	0%
4	AI-based apps help me to create learning plan that suit my level skill.		24%	74%	3%	0%

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The data shows that the majority of students responded positively that AI-based applications are useful in helping them improve their English pronunciation. All participants (44% strongly agree; 56% agree) that these tools supported their learning. Similarly, 91% participants (32% strongly agree; 59% agree) found the feedback provided by the applications helpful in identifying and correcting pronunciation errors. Furthermore, a total of 97% participants (53% strongly agree; 44% agree) acknowledged the benefit of being able to repeat pronunciation exercises, while 98% of participants (24% strongly agree; 74% agree) appreciated how the applications develop personalized learning plan that tailored to their proficiency levels.

These results are consistent with the findings of a study conducted by Pham & Pham (2025), which showed that AI-based applications such as ELSA Speak provides varied exercises with difficulty levels tailored to students' abilities and learning speeds, which significantly increases student motivation. Similarly, Dai & Wu (2023) emphasized that a structured and repetitive practice could improve learners' confidence and long-term pronunciation proficiency development. This is also supported by statements from the interviewees, who mentioned:

> *"In AI-based applications, there are sometimes helpful features, as mentioned earlier: scheduled exercises or a series of exercises to help us practice pronunciation." (Excerpt 1, P17)*
> *"In my opinion, the scheduling feature. Because we can learn consistently…so we can learn steadily and continuously." (Excerpt 2, P8)*

In addition to the flexibility of customized learning plans, AI-based applications also consider that each user will experience different pronunciation problems (Sholekhah & Fakhrurriana, 2023). The application will analyse pronunciation problems based on repeated mistakes, allowing it to examine the habit of the students. Some AI-based applications will provide suggestions and explanations regarding the correct mouth shape and tongue position when pronouncing a word. This kind of feedback helps learners to understand their issues which helps them adjust how they pronounce words during practice. Thus, personalized feedback can help improve pronunciation effectively. This is supported by a statement from one of the sources, who said:

> *"Especially when practicing speaking skills, there are words that are unfamiliar to me or that are familiar but I don't know how to pronounce them. In that case, the AI application will help me find the correct pronunciation." (Excerpt 3, P17)*

This shows that students benefited from having immediate access to corrective input when encountering unfamiliar words. Being able to receive personalized feedback not only boosted students' confidence but also encouraged more independent and consistent pronunciation practice.

Perceived Ease of Use

The table below present students' perceptions of how easy it is to use AI-based pronunciation applications. This includes their views on the clarity of instructions, feature organization, ease of correcting errors, and level of frustration when interacting with these tools.

Table 2. Result of Perceived Ease of Use

No	Statements	Categories	SA	A	D	SD
5	It is easy for me to understand how to use these pronunciation applications.	Perceived Ease of Use (PEU)	47%	50%	0%	3%
6	Interacting with AI-based pronunciation applications is often frustrating.		3%	32%	50%	15%
7	I find it easy to fix mistakes I make when using AI-based pronunciation applications.		26%	68%	6%	0%
8	The features in the AI pronunciation application are well-organized and easy to use.		32%	68%	0%	0%

The results found that students agreed that AI-based applications are easy to use. A large majority of participants (47% strongly agree; 50% agree) reported that the apps were easy to

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understand. Similarly, all participants (32% strongly agree; 68% agree) agreed that the features were well-organized and simple to navigate. In addition, 94% (26% strongly agree; 68% agree) indicated that correcting mistakes within the apps was easy. These results indicate that students strongly perceived AI-based pronunciation tools as user-friendly and accessible. Being able to use the application's features easily really helps in encouraging independent learning (Humardhiana, 2022). During the interview, P8 and P27 indicated:

> *"At first, it felt unfamiliar and confusing, but after using it several times, I gradually got used to it. It is quite easy to use and does not confuse me to the point where I cannot use it at all." (Excerpt 4, P27)*
>
> *"Yes, I was confused at first. ... I tried to figure out how to use it on my own, and eventually I figured it out. Once I understood it, the app was very easy to use." (Excerpt 5, P8)*

Most students also did not feel frustrated when using AI-based applications to practice pronunciation. Based on the data, 65% of participants (50% disagree; 15% strongly disagree) reported that they did not feel frustrated while using the applications. This shows that although frustration exists, it is not a major issue for most participants, who feel comfortable and confident using the applications. The user-friendly design, simple interface, and immediate feedback likely help reduce confusion and anxiety. during practice. In addition, since AI-based applications allow students to practice at their own pace without pressure from teachers or peers, they may feel more relaxed and less stressed while practicing pronunciation. This sense of control and flexibility likely contributes to the low levels of frustration reported by most students.

Technical Breakdown

The table below presents students responses about technical issues encountered when using AI-based applications. The items identify the frequency of application crashes, freezes, and delay, which potentially disrupt their pronunciation practice and learning progress.

Table 3. Result of Technical Breakdown

No	Statements	Categories	SA	A	D	SD
9	The AI pronunciation app often crashes or stops working unexpectedly.	Technological Breakdown	18%	41%	38%	3%
10	The application sometimes freezes or delays during pronunciation practice.		18%	47%	26%	9%

While students recognized the value and practicality of using the applications, students acknowledged technical issue as a significant challenge that interrupt the learning experiences. Specifically, 59% of participants reported that the application had crashed or stopped working unexpectedly (18% strongly agree; 41% agree). Similarly, 65% of students experienced issues such as freezing or delays while using the app (18% strongly agree; 47% agree), while 35% of participants disagree. These findings indicate that many students experience crashes, freezes, or delays while practicing pronunciation. Such technical issues can disrupt the learning process, hinder the students' progress, and reduce students' motivation and willingness to continue using the application (Fatimah, 2021). Students might experience technical problem caused by the apps itself or outside factors like unstable connection and device specification. The statement expressed as follow:

> *"When the app errors or crashes, I get frustrated and my motivation to learn decreases." (Excerpt 6, P27)*

Additionally, another interviewee stated one of the causes of technical disruptions, which expressed as follow:

> *"If it's caused by the app itself, it never happens. But it has happened if it's caused by my own device. For example, the device is slow, lagging, or has poor signal. My house is near the mountains, so the signal is poor, so it's sometimes lagging." (Excerpt 7, P11)*

This explanation illustrates how external factors such as device performance and network connectivity can significantly impact the effectiveness of AI-based pronunciation apps. Even if the app itself functions well, learners in areas with limited technological infrastructure may still experience disruptions.

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Limited Capabilities

The table below presents students' views on the limitation of AI-based applications. The table focuses on issues related to voice recognition accuracy and quality of feedback provided by application.

Table 4. Result of Limited Capabilities

No	Statements	Categories	SA	A	D	SD
11	The AI-based apps often misinterpret my pronunciation even when I speak clearly.	Limited Capabilities	12%	41%	41%	6%
12	The feedback provided by the AI-based app is too basic or unhelpful.		6%	32%	62%	0%

Based on the table above, most students reported that misinterpretation of pronunciation were a problem when practicing pronunciation. A total of 53% (12% strongly agree; 41% agree) reported that the apps sometimes misinterpreted their pronunciation, while 47% disagreed. This shows that over half of the students experienced problems where the application failed to correctly recognize their pronunciation, even though they felt they had spoken accurately. Problems with voice recognition accuracy can occur due to several factors, such as student accents, emotional tone, and intonation, which usually affect the quality of feedback. During interview, P5 expressed:

> *"For example, I said the word 'see,' but the app detected it as 'sea.' That really bothered me." (Excerpt 8, P15)*

This finding in line with a study conducted by Lyu & Andi (2025) that stated the accuracy of speech recognition from AI-based applications need significant improvement because it can be affected by external interference or user accents. Several studies also found similar problems that AI-based applications have difficulty recognizing students' pronunciation due to background noise (Dubey et al., 2025; Maknun, 2020).

In contrast, a majority of participants (62%) disagreed that the feedback was unhelpful, suggesting that students still valued the feedback provided by applications. This shows that most students feel that the feedback provided by AI-based applications is sufficient to help them practice pronunciation. Personalized feedback based on comparisons between students' pronunciation and that of native speakers can highlight aspects that students need to pay attention to, such as where stress occurs and errors in consonant or vowel pronunciation. This aligns with one of the respondents' statements, as expressed by P27:

> *"I feel very helped in practicing English pronunciation more clearly by carefully paying attention to the consonants from the feedback provided" (Excerpt 9, P27).*

This personalized guidance encourages self-awareness and more focused practice, making the learning process more efficient. After all, having the correct feedback can further improve students' pronunciation and motivate them to continue using these tools.

User Fear

The table below presents students' concern when using AI-based applications. The items explore issues related data privacy security and reliability of feedback provided by the application.

Table 5. Result of User Fear

No	Statements	Categories	SA	A	D	SD
13	I worry that the AI application is collecting or misusing my personal data.	User Fear	18%	35%	41%	6%
14	I often feel unsure whether the feedback from the AI is actually correct.		12%	47%	32%	9%

In addition to technical and recognition-related issues, the result show that there are several concerns remain. Over 53% of students (18% strongly agree, 35% agree) are concerned about the security of personal data. Meanwhile, 47% of participants (6% strongly disagree; 41% disagree) responded negatively to this statement. Concerns about data privacy in AI-based learning tools have also been frequently found in previous studies. According to (Wen et al., 2024), students often express anxiety about the security of personal information when interacting with AI-based educational platforms, especially when the system collects voice

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data or personal profiles. This indicates that more than half of the students are concerned about data privacy when using AI-based applications. As mentioned by P17:

> *"Yes, the anxiety I feel regarding personal information...there is still a sense of anxiety when asked to enter personal data to access the application" (Excerpt 9, P17)*

Additionally, 59% of participants (12% strongly agree; 47% agree) indicated uncertainty about the accuracy of AI feedback, often leading them to verify the results using other sources. Such uncertainty can reduce their confidence in using the application independently and may disrupt the learning process, as they feel the need to obtain external validation before fully trusting the feedback. During interview, P8 mentioned similar statement, which expressed in the following statement:

> *"Yes, I usually cross-check the correct pronunciation in another application or watch videos on YouTube." (Excerpt 10, P8)*

This concern is in line with the study by Dai & Wu (2023), which reported that while AI-based applications offer quick feedback, many students remain sceptical about the accuracy and reliability of such feedback as the apps still lack the insight and complexity of human teachers' instructions.

Standardizing Language

The table below presents students' views on how AI-based applications may influence their accent and speech individuality. The items focus on whether students feel pressured adopt standard accents, such as British and USA, and whether these tools limiting their ability to develop their personal speaking style.

Table 6. Result of Standardizing Language

No	Statements	Categories	SA	A	D	SD
15	I worry that using AI-based apps limits my ability to develop my own speaking style.	Standardizing Language	18%	15%	47%	21%
16	I feel pressured to imitate a "standard" (UK or USA) accent that doesn't match my own.		9%	32%	44%	15%

Concluding the survey results, It can be shown that 68% of participants (21% strongly disagree; 47% disagree) didn't feel worried that using AI-based application would limit their ability to develop their own speaking style. It's much higher than 32% of participants students (18% strongly agree, 15% agree) who disagree with the statement. Likewise, 59% of participants (15% strongly disagree; 44% disagree) didn't feel pressured to imitate accent such as UK or USA which considered the most commonly accent that can be found around the world. This total is higher than 41% of participant (9% strongly agree, 32% agree) who feel the pressure to imitate a 'standard' accent. These findings suggest that most students view the applications as supportive of natural and intelligible speech, rather than enforcing how students should speak. AI-based application provides flexibility that allows students to focus on improving pronunciation without forcing students to speak like native speakers. In addition, some participants believed that this could help them achieve clarity. This stated as follow:

> *"In my opinion, there is no need to correct it, because learning the English accent can help improve our pronunciation to make it clearer." (Excerpt 11, P11)*

Furthermore, a study conducted by Khalizah & Damanik (2024) emphasize that AI-based applications are designed to identify and assist user to speak more naturally. The findings from other studies also highlight that these applications are effective to resolve minor pronunciation issues to help users to speak more naturally (Fatimah, 2021; Sari & Kurniawan, 2025).

CONCLUSIONS

The purpose of the research is to investigate the way students perceived their experiences and challenges on the use of AI-based applications to practice pronunciation. The findings showed that students perceived AI-based applications as effective and user-friendly

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as supportive tools for practicing pronunciation. Students found these applications provide them with helpful and personalized feedback and flexible learning features like repeated exercises and customized learning plan. Students also found that it's easy for them to understand how to operate the applications, utilize in-apps features smoothly, and correct mistakes independently. The students also found that they enjoyed practicing pronunciation using the app. Furthermore, students perceived some challenges when using AI-based applications. Students reported several technical issues such as stopped working unexpectedly and delay that interrupted their practice. Another report also found that they experienced problem with the apps failed to interpret their pronunciation accurately. Some concerns regarding data privacy security also arose, as they expressed their anxious about the collection of personal information. Then, students also expressed certain doubts about the reliability of the feedback that led them to cross-check with other sources. Despite these challenges, students perceived the use of AI-based applications positively and acknowledged their usefulness in supporting pronunciation practice. Based on the finding above, while some limitation still exist, AI-based application shows promising potential as helpful tools in practicing pronunciation. It suggested that developers should continue to improve application stability by improving technical issues such as unexpected crashes and inaccurate speech recognition. In addition, more transparency about data policies is important to reduce students' anxiety about the use of personal information. Furthermore, educators could try integrating AI-based applications into classroom practice that should able to complement traditional instruction by providing students with extended opportunities for self-paced practice. Educators also can use certain app such as Duolingo to monitor students' progress and use the data for formative assessment or to adjust teaching focus.

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