

THE ROLE OF AI-POWERED DUOLINGO AND ELSA SPEAK APPS IN REDUCING LEARNERS' SPEAKING ANXIETY IN PRIVATE UNIVERSITIES

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Abstract

This study examines speaking anxiety as a significant barrier for English Language Learners (ELL), particularly in non-native contexts such as private universities in Dhaka, Bangladesh. As Artificial Intelligence (AI) is rapidly growing, language learning applications have added AI-based functionalities that are aimed at improving the speaking practice of learners. The study examines the effect of AI-powered apps, namely, Duolingo and ELSA Speak, on students and their speaking anxiety, confidence, and fluency based on such features as individual feedback, games, and adaptive learning mechanisms. In order to gather a set of in-depth information, a mixed-method cross-sectional design that combined both quantitative surveys and qualitative responses was used. The results reveal that speaking anxiety is still widespread among students, and Duolingo and ELSA Speak are considered moderately efficient in reducing anxiety and raising speaking confidence. According to the research, AI-based language learning applications have the potential to serve as an additional resource to the minimization of elements in the development of speaking anxiety and promoting speaking development. The results present context-based evidence from Bangladeshi private higher education universities and give implications for the implementation of AI-based learning tools in language education.

Keywords: AI-assisted app, artificial intelligence, Duolingo, ELSA Speak, speaking anxiety

Introduction

It is also known that speaking anxiety is among the gravest psychological obstacles to learning English as a Foreign Language (EFL). This problem is especially observable in non-native English-speaking countries like Bangladesh, where the English language is used as the main instructional language in private universities. English is often used when students have to take part in presentations, viva exams, classroom discussions, and professional communication. Nevertheless, most of the learners feel too frightened, nervous,



and self-doubting when addressing people in English, and this factor greatly influences their grades and social self-esteem.

According to Brown (2000), speaking anxiety refers to the sense of insecurity, irritation, distrust in self, and fear of speaking orally. On the same note, Horwitz, Horwitz, and Cope (1986) conceptualize foreign language anxiety as a set of communication apprehension, negative evaluation fear, and test anxiety. With reference to the example of private universities in Dhaka, students tend to remain silent because of the fear of committing mistakes in their pronunciation, being ridiculed by their peers, or being evaluated negatively by the instructors. Abbasi et al. (2020) also mention that speaking opportunity and classroom pressure are factors that promote foreign language anxiety in university students of universities.

The effects of speaking anxiety do not just stop in a classroom. In Bangladesh, higher education is linked to higher education opportunities in foreign countries, multinational jobs, and professional growth, which are closely related to English proficiency. Students who have high levels of speaking anxiety are likely to perform poorly in international standardized tests like IELTS and perform poorly during job interviews where oral fluency is a requirement. As such, the issue of speaking anxiety is not only classroom-related but an educational and socio-professional one.

Language learning has changed considerably with the rapid development of Artificial Intelligence (AI). Language learning apps like Duolingo and ELSA Speak now have personalized learning systems and speech recognition technology, game-based exercises, and feedback on pronunciation. These applications are a self-paced and judgment-free environment to talk privately, unlike real classrooms. According to Chen (2022), AI-assisted technologies may be used to provide a supportive learning experience which, in turn, might lead to a decrease in the levels of public speaking anxiety. Likewise, recent research shows that AI-driven pronunciation systems can increase the level of confidence, fluency, and motivation to talk in learners.

Though there is increasing research on AI in language education internationally, there is scanty empirical research that has focused on how AI-based applications specifically alleviate speaking anxiety in a Bangladeshi-based private university. Furthermore, despite the fact that both Duolingo and ELSA Speak are widely available and used by learners, there is no sufficient literature to examine their integrated or contrasting effects in reducing English speaking anxiety among university students in Dhaka.

Duolingo is more of a general language-learning, curriculum-based, and gamified app with adaptive exercises, but ELSA Speak is more of an AI-based pronunciation analysis and phonetic correction app. Since they have varied functional areas of interest, it is academically important to investigate their contribution to the alleviation of speaking anxiety. Thus, this paper explored how AI-based apps, like Duolingo and ELSA Speak, can help to eliminate speaking anxiety in English language learners in the private universities of Dhaka, Bangladesh.

Research objectives

1. To study how AI-based applications, Duolingo or ELSA Speak, can alleviate speaking anxiety in English language learners in a private university in Dhaka.
2. To determine how using Duolingo and ELSA Speak has been perceived to benefit and limit the reduction of English-speaking anxiety.
3. To investigate the way in which Duolingo and ELSA Speak can help learners gain confidence in speaking and enhance their experience learning the language.

Literature review

Conceptualizing speaking anxiety

It is well known that speaking anxiety is a multidimensional psychological construct that influences the performance of learners in an oral presentation in a foreign or second language. Even though the scholars have described the concept in slightly different ways, there is a general agreement that speaking anxiety is a concept that is characterized by emotional, behavioral, and cognitive aspects.

Horwitz, Horwitz, and Cope (1986) theorize foreign language anxiety to be a specific type of anxiety with communication apprehension, negative appraisal apprehension, and apprehension about tests. On the same note, MacIntyre and Gardner (1994) define it as a contextual tension and anxiety that is linked to second language communication. Scovel (1978) points out its physiological aspect, which he terms it as feelings of fear and anxiety and increased nervous system arousal during language-learning situations. Young (1991) also emphasizes the fact that speaking anxiety can be a result of learners' beliefs about language learning, classroom practices, and interpersonal pressures.

The combination of these views can be synthesized, and speaking anxiety can be regarded as the psychological state of fear of making an error, fear of being evaluated negatively, doubts about oneself, and avoiding oral involvement. It has a cognitive (inability to retrieve vocabulary) impact on learners, emotional (nervousness, embarrassment), and behavioral (unwillingness to talk) implications.

Having observed the effects of anxious learners, Gregersen and Horwitz (2002) note that such learners often develop avoidance behaviors and negative self-assessments of their performance. Liu and Jackson (2008) also state that high speaking anxiety decreases the willingness of learners to communicate, indicating that learners have fewer opportunities to practice and improve.

Further to provide an organization of anxiety in foreign languages, Kim (2002) came up with a theoretical model which has three dimensions that are interrelated in the following manner:

- Production Anxiety - fear and nervousness regarding speaking and oral performance.
- Aural and Evaluative Apprehension - anxiety as a result of difficulties in being understood through listening and worry of being judged.
- Literacy Anxiety - the anxiety that relates to reading and writing in a foreign language.

Production Anxiety is the one that is the most proximate to speaking anxiety, because it specifically refers to speaking aloud and fear of performing in front of an audience. Production Anxiety is especially applicable in the case of private universities in Dhaka, as students are often pushed into making presentations, discussing issues, and answering spontaneously using English.

Speaking anxiety is mainly conceptualized in terms of the Production Anxiety dimension of the Kim (2002) model, and the rest of the concepts of fear of negative evaluation and apprehension of communication, as suggested by Horwitz et al. (1986), are also considered in the context of this study. The proposed integrated model forms the theoretical basis of the study on the potential of AI-powered applications to eliminate speaking anxiety in learners.

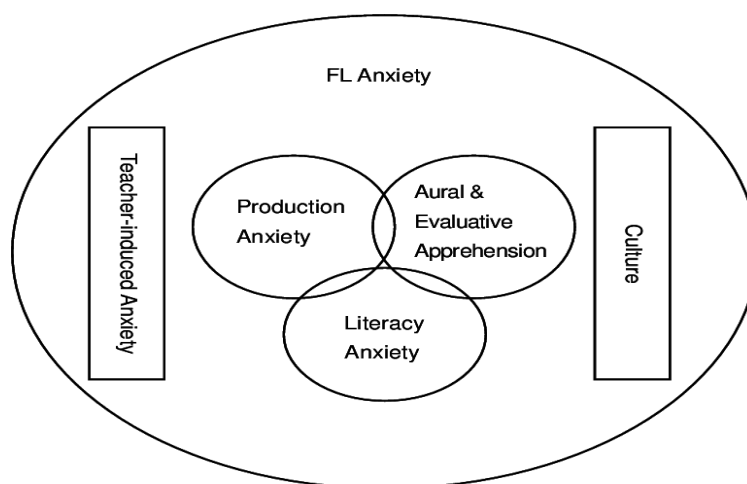


Figure 1. A theoretical model of foreign language anxiety (reprinted from Kim, 2002, p. 106)

Understanding speaking anxiety in language learning

The anxiety of speaking is not a single emotional response of a person but a complex of psychological barriers in the process of language learning. Anxiety in a classroom setting affects the cognitive processing of learners, their emotional stability, and participation behavior.

According to Horwitz et al. (1986), foreign language anxiety is directly related to communication apprehension and the fear of being negatively evaluated. When speaking, learners are mostly afraid of committing grammatical or pronunciation mistakes and being criticized by a teacher or classmates. This terror may deter voluntary efforts and restrain oral practice.

Cognitively, MacIntyre and Gardner (1994) believe that working memory is disrupted by anxiety. When students become extremely nervous, their vocabulary recall, grammatical structure arrangement, and fluency are limited. Consequently, students who have sufficient linguistic knowledge are still likely to perform poorly in speaking tasks because of cognitive disruption resulting from anxiety.

Kim (2002) explains this phenomenon further by presenting the notion of Production Anxiety, that happens to mean anxiety in relation to oral language production. Production Anxiety: the anxiety is more severe when the learners have to speak impulsively in an evaluative environment. Such a scenario places

pressure on the aspect of doing things correctly; thus, this may lead to a negative influence on fluency and confidence.

Studies also point out that avoidance behaviors are caused by speaking anxiety. Gregersen and Horwitz (2002) note that anxious learners tend to undervalue their speaking skills, and they shun talking out in class. Liu and Jackson (2008) also supplement that high anxiety levels decrease the willingness of learners to communicate, and consequently they are deprived of meaningful exposure to speaking practice.

In a traditional university classroom, there are some contextual factors which can intensify speaking anxiety. Machmud and Abdullah (2018) believe that performance pressure can be heightened when peer comparison is applied, individualized feedback is limited, and the structure of formal assessment is applied. In private universities in Dhaka, where English is used as a medium of instruction and examinations are often conducted orally and through viva, students are likely to have a stronger sense of anxiety as they are expected to perform well at all times.

Thus, speaking anxiety cannot be perceived as simply an emotional response but a cognitive and situational issue that is enclosed in academic settings. This problem needs to be dealt with by learning contexts that minimize fear of negative assessment, offer repetitive low-risk speaking situations, and provide supportive feedback systems. This necessity reveals a possibility to discuss such alternative learning tools as AI-powered language applications as a potential anxiety-reducing intervention.

The rise of AI-powered apps in language learning

The introduction of Artificial Intelligence (AI) into language learning has significantly changed the conventional learning landscape. By contrasting the traditional classroom learning process, AI-based software provides adjustable, evidence-based, and interactive education services based on the needs of each individual learner. These technological innovations have presented alternative opportunities in managing affective barriers, which include speaking anxiety.

Adaptive learning systems are one of the significant advances in AI-assisted language learning. According to Dennis (2024), AI-based platforms process learners' performance data and modify the difficulty of the lesson based on it. This individualized practice will keep the learners neither frustrated nor bored so that they may be less intimidated by the tasks that are beyond their proficiency level. Likewise, Ali (2022) states that adaptive AI environments enhance interaction with the learners but do not hurt their emotional well-being.

The other significant invention is the speech recognition technology that is powered by AI. According to Qiao and Zhao (2023), AI-based applications have the potential to improve pronunciation, intonation, and fluency with the help of real-time feedback. Nguyen and Van Tuyen (2024) also emphasize that speech recognition technology can fill the gap between theoretical knowledge and the practical process of speaking since learners have the opportunity to rehearse the oral production repeatedly. This exposure in a personal setting could eventually lead to a decrease in fear of performing in front of an audience.

The third important characteristic is gamification. Based on the results, Shortt et al. (2021) note that game-based learning elements, including reward

mechanisms, progress tracking, and achievement badges, increase motivation and retention among learners. According to Handini et al. (2022), gamified environments can reduce anxiety levels since they replace the emphasis on formal evaluation with an interactive gaming environment. Psychological pressure can be reduced when learners feel that speaking practice is a game and not a graded speech.

Moreover, AI-based systems offer a low-stress and nondemanding practice space. Chen (2022) insists that the technology-facilitated language learning situation can help decrease public speaking anxiety through the provision of the opportunity to rehearse privately. According to Bao (2019), AI-based tools, offered at home, have the potential to reduce foreign language anxiety, as the learners would have an opportunity to practice without being compared to their peers.

Nonetheless, the results of researchers are not always favorable. According to Bao (2019), the usefulness of AI tools in the reduction of speaking anxiety is dependent on the individual differences of learners and their familiarity with technology, as well as the context. Thus, AI-powered applications have potential opportunities, but the influence on speaking anxiety should be studied context-specifically.

These advancements form the theoretical framework for analyzing certain AI-driven applications like Duolingo and ELSA Speak. The next section explains the role of the AI-based tools in language learning and the reasons why they can affect the confidence of speaking.

The role of AI-powered applications in reducing speaking anxiety

The applications powered by AI have a range of technological benefits; their pedagogical utility is found in the way their capabilities can overcome psychological obstacles to language acquisition. In particular, AI tools can affect speaking anxiety by addressing communication apprehension, fear of negative assessment, and production anxiety.

The creation of personal and low-risk speaking environments is one of the most important initiatives of AI-powered applications. Chen (2022) argues that technology-enabled language platforms enable learners to practice oral production without having to be observed by an interlocutor. This lessens the anxieties about being negatively rated, which is one of the fundamental elements of foreign language anxiety as discovered by Horwitz et al. (1986). By having learners practice speaking in a non-judgmental online environment, they can, perhaps, soon develop trust, and only then can they interact with a classroom environment.

Real-time automated feedback is another mechanism that is significant. As Dennis (2024) describes, AI speech recognition can immediately detect the mistakes in pronunciation and offer corrections. The theoretical viewpoint of this immediate feedback is that it might inhibit Production Anxiety, as outlined by Kim (2002), since learners have a better understanding of the mistakes they make without being humiliated in front of other people. Learners are not afraid to be corrected by the instructors or other students; the system provides objective and personalized feedback to the learners.

Adaptive learning algorithms are also used in AI-powered applications. According to Ali (2022), adaptive systems can vary in task difficulty depending

on the performance of the learner. This is essential in anxiety reduction since an excessive challenge may cause cognitive congestion and pressure, as postulated by MacIntyre and Gardner (1994). The cognitive interference that results due to anxiety can be reduced when difficulty is properly matched with the proficiency of the learners.

Gamification also helps in relieving anxiety. Shortt et al. (2021) emphasize that the reward system and progress monitoring boost learner motivation. In a gamified environment, performance evaluation is replaced with completion of tasks and milestones of achievement. According to Handini et al. (2022), the change can help decrease psychological anxiety, especially when speaking, where learners tend to be afraid of making mistakes.

Nonetheless, AI applications may not have a guaranteed effect in alleviating the feeling of speaking anxiety, even though this effect may be beneficial. According to Bao (2019), the results are affected by individual differences, technological literacy, and situational factors. Thus, although AI-based applications theoretically mitigate the elements of communication apprehension and production anxiety, empirical research is required to find out the actual effect of these applications in particular educational settings.

When it comes to private universities in Dhaka, where knowledge of English is both academically and professionally important, in this regard, it is specifically important to examine how AI-powered applications play the role of the so-called anxiety-reducing means. The research thus examines the claim that applications like Duolingo and ELSA Speak will play a significant role in reducing speaking anxiety in students of the university.

Pedagogical rationale for selecting Duolingo and ELSA Speak

Out of the abundance of AI-based language learning apps that exist nowadays, two programs were chosen to include in this research: Duolingo and ELSA Speak, since these two apps are easy to use, popular, and have different purposes in pedagogy. Despite their integration of artificial intelligence, both applications are very different in the way they are designed and focused on instruction. The analysis of the two makes it possible to have a wider perspective on the ways in which various AI affordances can be used to affect speaking anxiety.

Duolingo is mainly aimed at a general language learning resource that incorporates vocabulary, grammar, listening, reading, and speaking activities into a curriculum framework consisting of games. According to Shortt et al. (2021), Duolingo uses adaptive algorithms to adjust the level of difficulty of the lessons depending on the performance of the learner. The gamification feature, which includes points, streaks, levels, and rewards, is intended to maintain motivation and interest. According to Fitria et al. (2023), the adaptive system offered by Duolingo detects errors made by the user and modifies the way one practices.

Anxiety reduction. In terms of anxiety reduction, Duolingo can be used to lessen communication apprehension through repeated exposure to structured speaking activities in a low-stress situation. The gamified structure will be able to change the mindset of learners to focus on achieving the tasks rather than fearing making a mistake, which may lead to fear of being negatively evaluated.

On the contrary, ELSA Speak is specifically used to enhance pronunciation and oral fluency with the help of advanced speech recognition technology. According to Kholis (2021), ELSA Speak is an AI-based pronunciation training system that offers phoneme-based analysis and real-time correction. Nguyen and Van Tuyen (2024) further elaborate by stating that the application compares the speech of learners with the standards of native speakers and provides them with exercises with the desired level of practice.

In contrast to the curriculum-based method used by Duolingo, ELSA Speak focuses too much on the accuracy of oral production. This specialization is directly related to Kim's (2002) idea of Production Anxiety since students are subjected to anxiety because of errors in pronunciation and fear of speaking in the wrong way. ELSA Speak can minimize embarrassment during a correction situation because of the presence of private, automated, and immediate feedback.

The choice of those two applications hence enables the discovery of two different AI affordances:

- Duolingo - Curriculum-based, game-based, general language learning.
- ELSA Speak - This is a specialized pronunciation-oriented speech-recognition training.

According to Vadivel et al. (2023), Duolingo can be recommended more in the context of general language development, and ELSA Speak is especially effective in terms of pronunciation accuracy. When exploring the two applications in the same educational setting, one can get a more detailed idea of how the various AI design characteristics can be used to alleviate speaking anxiety.

Secondly, the two applications are available in high numbers through mobile devices and are used by students in Bangladeshi universities; hence contextually applicable in this research

Duolingo and ELSA Speak role in enhancing speaking skills

Empirical studies recommend that AI-based applications may be used in enhancing speaking proficiency in learners (especially pronunciation accuracy, fluency, and confidence). Nevertheless, how these improvements can take place varies according to the pedagogical layout of the application.

Research on Duolingo shows that its gamified and structured curriculum fosters the practice that is critical to oral skill development. According to Handini et al. (2022), learners using Duolingo have shown positive progress in their pronunciation and the confidence that they can handle speaking activities. On the same note, Shazly (2021) believes that gamification boosts motivation, thus indirectly supporting oral fluency through the willingness of learners to speak in practice.

In turn, the studies of ELSA Speak focus on its specific interest in pronunciation and phonological accuracy. The study by Nguyen and Van Tuyen (2024) indicates that the learners working with ELSA Speak demonstrate a quantitative distinction in precision during pronunciation because of correction at the phoneme level. Syabina and Hz (2024) also observe that the learners feel substantial improvement in articulation and speech clarity following the realization of repeated practice sessions under the guidance of AI.

Although Duolingo encourages a more communicative approach and use, ELSA Speak directly helps with tackling pronunciation-related mispronunciation errors that tend to cause Production Anxiety, according to Kim (2002). Pronunciation insecurity is often related to fear of negative evaluation, especially in education where oral performance is evaluated. Thus, even pronunciation accuracy can lead to the enhancement of technical speaking skills as well as self-confidence.

Besides, it is possible that with regular exposure to AI-mediated speaking practice, the willingness of learners to communicate might grow over time. Ouyang et al. (2024) believe that the use of AI-based tools can increase engagement and decrease hesitation during oral communication. As learners feel that they have improved their fluency and pronunciation, the confidence of their speech would rise, and therefore, anxiety levels would decrease.

Nevertheless, the current studies are more inclined to the outcomes of speaking proficiency in comparison to the measurement of the reduction in speaking anxiety. Though advancements in fluency and pronunciation are widely documented, a connection between AI-mediated speaking practice and anxiety elimination has not been thoroughly investigated, especially in non-native English speaking e.g. Bangladesh.

It is this gap that implies the necessity of context-specific research into the effect of AI-driven applications like Duolingo and ELSA Speak on the performance of speaking as well as the psychological aspects of speaking anxiety in university students.

Research gap

Past studies have confirmed that speaking anxiety is an important factor in influencing the performance of foreign language learners through oral performance. Research has also shown that AI-based language learning software is capable of enhancing pronunciation, fluency, and engagement with the learner. The majority of the current studies, however, are more concerned with speaking proficiency outcomes instead of studying the psychological aspect of speaking anxiety.

In addition, there is a lack of empirical research on the use of AI-based apps like Duolingo and ELSA Speak in the context of Bangladesh, which is a country with limited English in universities as the number of languages of instruction. Even though the number of applications that are utilized by students is growing, their particular role in the process of eliminating the feeling of speaking anxiety in this case has been under-researched.

Thus, a context-specific study, analyzing the attitudes of students in regard to the impact of AI-powered applications on speaking anxiety, speaking confidence, and experience of language learning in Bangladeshi higher education institutions, is required.

Method

The study focuses on speaking anxiety and the impact of Artificial Intelligence (AI) based applications like Duolingo and ELSA Speak in reducing anxiety among English Language Learners (ELL) in private universities. The researcher of this research administered the survey on the impact of AI-based

applications in reducing speaking anxiety among English Language Learners in private universities in Dhaka, Bangladesh. Readers were informed about how this study was done by the researcher in this section. Five private universities in Dhaka were included for this experiment.

Research design

The research design of this study was a mixed- method research design that combined both quantitative and qualitative research methodologies in an attempt to come up with a comprehensive view of how AI-powered applications can be used to reduce speaking anxiety.

The quantitative part was supposed to quantify the levels of speaking anxiety of students and the perception of Duolingo and ELSA Speak through a structured questionnaire. The method enabled trend and pattern analysis of participants statistically.

Structured open-ended questions were used to obtain a qualitative component by investigating the personal experiences, perceived benefits, and difficulties encountered by students who use the applications. The incorporation of qualitative data allowed investigating more profoundly emotional reactions of learners and circumstances that could not be entirely described in numerical terms.

The research design was a cross-sectional survey, which implied that the research collected the data at one moment in time among the students who had previously experienced using Duolingo and ELSA Speak. There was neither a controlled experimental intervention nor a pre-test/ post-test comparison of this research. Rather, it was aimed at studying the perceptions of students and their self-reported experiences on the usefulness of AI-powered applications in the process of alleviating the fear of speaking.

The mixed-methods design was used to support the research questions, which focus on the quantitative (measurable) and qualitative (subjective) perceptions of speaking anxiety reduction.

Participants

The University Grants Commission (UGC) placed the number of private universities in Dhaka at 57. Convenience sampling was used to select 5 private universities out of this population in terms of institutional accessibility and administrative approval. The institutional or random sample cannot be used as it was not logistically and permission-wise possible.

In these five universities, voluntary response sampling was used to recruit the participants. There were 100 undergraduate students in the study.

Inclusion criteria

- The subjects were sampled in the study when they:
- Are at present in a private university in Dhaka as undergraduate students.
- Have at least one month of prior experience with Duolingo and/or ELSA Speak.
- Practicing English speaking through these applications is reported to be independent.

- Gave informed consent to take part in the study.
- Students who did not use Duolingo or ELSA Speak before were not included in the survey.

Participant distribution

Each of the five participating universities has an approximate number of 20 students who were recruited to ensure proportional representation.

Demographic profile

The age of the participants was between 18 and 25 years. Male and female students were both included. All the participants were English as foreign language (EFL) students in systems where English was the first language of instruction.

Ethical considerations

The responses were voluntary, and the respondents knew the aim of the research. They were anonymous and confidential, and no personal identifying information was gathered.

Instruments

The researcher of this research used a questionnaire-based survey, which consists of 12 items and 5 items for structured open-ended questions as investigation tool to achieve the goal of the study. The research tool consists of:

Questionnaire-based survey for students

A questionnaire-based survey was incorporated for the students because every student has a different opinion about speaking anxiety and the role of Duolingo and ELSA Speak in the reduction of speaking anxiety. Every learner may face speaking anxiety from a different perspective. A questionnaire-based survey would help learners to convey his/her opinion independently, which was very crucial for this study. A five-point Likert Scale (1932) is used, from “Strongly Agree” to “Strongly Disagree”; this method was also used by Yuliawati and Suryadi (2023) in the study on “Students’ Perceptions on the Use of Elsa Speak Application to Improve English Speaking Skills”. The researcher of this research also conducted a Focus Group Discussion (FGD) to incorporate all 12 items for survey questions.

Structured open-ended questions for selected students

In addition, 5 structured open-ended questions were asked of selected students in relation to the survey based on a Focus Group Discussion (FGD). Through these open-ended questions, the research attempted to explore learners’ actual situation of speaking anxiety and the role of AI-driven Duolingo and ELSA Speak in the reduction of speaking anxiety.

Procedure of data collection

The researcher of this research obtained permission from the university authorities beforehand and went to the universities to collect data from students. All the data were collected through Google Forms.

Data analysis

The researcher of this research portrayed the data analysis through statistical measurements, incorporating the mean and deviation. A five-point Likert Scale was used to evaluate the responses of the participants. Yuliawati and Suryadi (2023) discussed the Likert scale as the key to the successful measurement of attitude, which allows the survey to respondents by asking which response option best reflects their position regarding that dimension. On the scale, the responses were coded as 1. Indicating “Strongly Agree” 2. “Agree” 3. “Neutral” 4. “Disagree” 5. “Strongly Disagree”. The mean scores of each of the items of the questionnaire follow- mean scores 5- 4.21 suggesting ‘Strongly Agree’, mean scores 4.20- 3.41 suggesting ‘Agree’, mean scores 3.40- 2.61 suggesting ‘Neutral’, mean scores 2.60- 1.81 suggesting ‘Disagree’ and finally mean scores 1.80- 1 indicating ‘Strongly Disagree’. Microsoft Office Word 2016, Office Excel 2016, and SPSS were used to process data.

Findings and Discussion

The current study investigates students who suffer from English Speaking Anxiety and The Role of AI-Powered Duolingo and ELSA Speak Apps in Reducing Speaking Anxiety among English Language Learners in private universities in Dhaka.

Quantitative data discussions

Students were given a questionnaire that consists of 12 items. 100 students from 5 universities in Dhaka took part in the questionnaire survey. The table below shows the mean scores and standard deviation of each item of the questionnaire.

Statistical presentation and discussion of the survey questionnaire:

Table 1. Mean and standard deviation

Items	Mean	Standard Deviation
1. I feel anxious when I have to speak in English in academic settings.	4.05	0.78
2. I worry about making pronunciation mistakes when speaking English.	3.49	1.07
3. Using Duolingo and ELSA Speak increases my confidence when speaking English.	3.65	1.04
4. Using Duolingo and ELSA Speak helps reduce my English-speaking anxiety.	3.61	0.96
5. After using Duolingo and ELSA Speak, I feel more willing to speak English in front of others.	3.48	1.07
6. Duolingo and ELSA Speak provide personalized feedback that helps improve my speaking skills.	3.57	1.05
7. Duolingo and ELSA Speak offer a judgment-free environment for practicing English.	3.50	1.17
8. AI-powered pronunciation correction helps reduce my fear of making mistakes while speaking.	3.30	1.20
9. The gamified features of Duolingo and ELSA Speak motivate me to practice speaking regularly.	3.42	1.13

10. I prefer practicing speaking with Duolingo and ELSA Speak rather than relying only on traditional classroom activities.	3.59	1.09
11. Since using Duolingo and ELSA Speak, I have noticed improvement in my pronunciation.	3.43	1.14
12. Duolingo and ELSA Speak provide useful opportunities to practice real-life conversational speaking.	3.72	1.10

In order to give a more significant interpretation, 12 items of the questionnaire were broken down into three analytical dimensions which would correspond to the research questions:

- Speaking Anxiety (Items 1-2)
- Anxiety Lessening and Self-Belief (Items 3-5)
- Artificial Intelligence Characteristics and Student Experience (Questions 6-12)

The response trends were analyzed using descriptive statistics (mean and standard deviation).

Speaking anxiety

The two measures of baseline speaking anxiety provided a high total mean ($M = 3.77$). This implies that in academic situations, the students tend to have apparent anxiety about speaking English.

The highest consensus was found when it comes to anxiety in academic speaking scenarios ($M = 4.05$), which implies that classroom performance is a significant stressor. Fear of pronunciation errors ($M = 3.49$) was moderately low, which shows that anxiety is caused by production factors, but it is not constant among learners.

This finding supports that speaking anxiety is a practical and actual concern in Dhaka-based private universities.

Reduced anxiety and development of confidence perceived

It should be noted that items (3-5) that measure anxiety reduction and confidence improvement have an overall mean of about ($M = 3.58$). This is a common consensus that Duolingo and ELSA Speak have a positive effect on confidence and anxiety.

Students reported:

- Feel confident about speaking ($M = 3.65$)
- Feeling less anxious ($M = 3.61$)
- More willingness to be able to talk ($M = 3.48$).

These results are positive, but the range of the strong agreement is not achieved; instead, the middle range of agreement is attained. This implies that AI applications aid in alleviating anxiety but not fully reduce it.

The standard deviations of about 1.0 are a sign of variation in personal experiences, and it is possible that the effectiveness of AI tools does vary between different learners.

AI capabilities and learning process

Items 6-12 that were associated with AI features and learning experience generated a composite mean of around ($M = 3.48$), which indicates moderate positive perceptions.

Out of them, the greatest consensus was gained with respect to real-life conversational practice opportunities ($M = 3.72$), which means that the task of simulated speaking is especially appreciated.

There were also positive trends in personalized feedback ($M = 3.57$), and preference towards AI practice as opposed to traditional classroom activity ($M = 3.59$).

Nevertheless, the pronunciation correction ($M = 3.30$) and fluency improvement ($M = 3.31$) were relatively lower in means, which implies that the development of technical skills might take more time and involve a longer period of engagement.

The standard deviations (between 1.05 and 1.20) are moderate, which means that although the use of AI features has an impact on many students, its level is uneven.

Qualitative data discussion

Thematic analysis was used to analyze the open-ended responses of 20 participants. There were five themes that arose related to the experience of the students with speaking anxiety and AI-powered applications.

Theme 1: Fear of speaking in classroom as an obstacle to classroom participation

The majority of the respondents admitted that anxiety when speaking restricted their level of confidence in the university environment. The fear of committing pronunciation errors, the inability to be fluent, and the fear of being judged negatively by peers and teachers were mentioned on a regular basis. Some of the students also claimed that prior school correction augmented their timidity when participating in oral classrooms.

Theme 2: AI as a tool in building trust

Generally, the participants said that Duolingo and ELSA Speak were useful in building speaking confidence. The applications were viewed as aiding tools that provided an opportunity to practice and improve gradually. Most students reported that the frequent use of the apps enabled them to feel more ready to talk in real-life contexts.

Theme 3: Supportive functions to overcome fear

Students indicated several characteristics that contributed to decreased fear of speaking, such as instant pronunciation feedback, adaptive practice, and gamified progress tracking. Specifically, the skills to practice repeatedly at their own speed were appreciated. These capabilities enabled the learners to rectify the errors at their own convenience and then come out to read aloud.

Theme 4: Fluency and speaking comfort improvement

The vast majority of participants stated that they had observed a gradual progress in the fluency rates and the use of vocabulary. Some of them reported

that they were more comfortable having conversations in English once they had practiced it regularly. The development of confidence was mentioned as progressive and not instant.

Theme 5: Technical constraints and limitations

Although the general impressions were positive, the respondents reported several limitations that included challenges in accent recognition, a lack of depth in conversation, and, in some cases, rigid feedback systems. According to some of the students, it was not easy to transfer practice based on the app to real classroom communication.

Altogether, qualitative data indicate that AI-enhanced apps can help to decrease some of the elements of speech anxiety to ensure psychological safety and guide practice, although the real social dialog remains crucial to language growth.

Key findings

- Students experience moderate anxiety levels when they are forced to use English in their academic institutions.
- Duolingo and ELSA Speak are viewed as averagely efficient in decreasing the fear of speaking.
- Judgment-free and private practice environments also lessen the fear of negative evaluation.
- AI-based voice recognition feedback helps in incremental gains in speaking confidence.
- Gamification enhances motivation, while not single-handedly helping to do away with anxiety.
- Fluency and readiness to communicate increase with practice based on AI on a regular basis.
- Reduction of anxiety does not take place immediately but progressively.
- There is no replacement of classroom interaction with AI applications, which are supportive tools.
- There are technical drawbacks such as problems with accent recognition and the depth of conversation, which limit complete effectiveness.

Conclusion

This paper has explored how AI-based language learning tools, namely Duolingo and ELSA Speak, could be used to alleviate anxiety in speaking among English language learners in small universities in Dhaka, Bangladesh. The results show that oral anxiety still presents a major problem for university students, especially when it comes to academic discussions whereby oral performance is being assessed. A significant percentage of respondents noted that they felt nervous, feared that they might make mistakes in pronunciation, and were hesitant when addressing people in English. The findings indicate that AI-driven apps have a moderate effect on decreasing speaking anxiety and increasing speaking confidence. Students view these applications as supportive resources, which offer them the privacy and non-judging space to practice without any fear of being harshly criticized. The following features are found to be helpful: real-time

pronunciation feedback, adaptive learning systems, and conversational simulations help learners to get acquainted with errors and progressively acquire fluency and confidence.

Nevertheless, the alleviation of anxiety is a gradual process, and the net effect is supportive and not transformative. Qualitative results also indicate that although AI applications promote psychological safety and stimulate repetitive practice, they do not fully prevent anxiety that lies in classroom interaction and social assessment. Some participants cited technical constraints such as accent recognition and less depth of conversation, which sometimes made them less motivated. The results of the studies might lead to the conclusion that AI-powered applications should be used as auxiliary tools and incorporated into the classroom setting for structured language learning instead of being used as an alternative to traditional speaking practice. This paper shows that AI-aided language learning has the potential to resolve some aspects of speaking anxiety, specifically, pronunciation-related fear and embarrassment of being mocked in front of people. Concurrently, it provides insight into the significance of integrating technology devices together with supportive pedagogical interventions to develop holistic solutions that can be used to avert speaking anxiety in higher education settings.

Practical implications

The conclusions have a number of implications for teachers and institutions as well as policymakers:

- The use of AI-driven speaking apps can be explored by the private universities to provide additional practice features or tools in general in language courses.
- Teachers can also promote pre-recorded AI-enhanced rehearsal preceding graded orals to alleviate anxiety.
- Learning institutions need to offer orientation programs that will equip students with the ability to work with AI tools and cope with unrealistic expectations.
- The creators of AI-based applications ought to enhance the sensitivity of the accent recognition and make conversational simulations more diverse in order to be more authentic.
- Applications that are powered by AI must be considered as a supporting tool instead of substitutes for classroom interaction.

Future research recommendations

Future studies may consider:

- Performing longitudinal or experimental studies to determine the reduction of anxiety.
- Applying sound foreign language anxiety scales to improve the accuracy of measurement.
- Comparing AI application with controlled group assignment.
- Research on the effects of AI tools on various levels of proficiency.
- Researching the effect of cultural aspects on AI-induced reduction of anxiety.

- Generalizability would also be enhanced by further studies of various institutional settings in Bangladesh.

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