



A STUDY ON DUOLINGO MOBILE APPLICATIONS TO IMPROVE EFL STUDENTS' LISTENING COMPREHENSION PERFORMANCES

Nguyen Khanh Tuong¹,

Thai Cong Dan²ⁱ

¹English Studies Program,
Department of English Language and Culture,
Can Tho University,
Can Tho, Vietnam

²Senior Lecturer, Dr.,
School of Foreign Languages,
Can Tho University,
Can Tho, Vietnam

Abstract:

The significance of listening comprehension in learning English as a foreign language cannot be denied, as it forms a foundational basis for effective communication and language skill development. Proficient listening skills are essential not only for understanding spoken language but also for meaningful communication, grasping nuances, and interpreting contextual cues. Furthermore, listening comprehension serves as a cornerstone for vocabulary acquisition, grammar understanding, and cultural awareness, making it one of the most crucial aspects of language learning. This study investigates the effectiveness of the Duolingo mobile application in enhancing EFL students' listening comprehension within the evolving landscape of educational methods. Data collected from 39 third-year English major students at the School of Foreign Languages, Can Tho University, Vietnam, through comprehensive surveys and structured interviews highlighted the students' high appreciation for Duolingo's impact on their listening abilities within the Vietnamese educational context. Students emphasized the flexibility and engaging nature of Duolingo's listening features, which immerse learners in diverse real-life situations and provide opportunities for repetitive practice. Regular engagement in these exercises was considered essential for expanding vocabulary, improving grammar, and achieving deeper language comprehension in real-world contexts. Despite receiving positive evaluations, participants identified areas for improvement, particularly emphasizing the need for diversity in pronunciation and contexts within Duolingo's listening exercises to enhance effective communication. Moreover, they suggested improvements in feedback mechanisms to provide timely and useful feedback for language learning progression. In conclusion, while the Duolingo mobile application offers promising opportunities for enhancing EFL students' listening

ⁱ Correspondences: emails tcdan@ctu.edu.vn, tuongb2014279@student.ctu.edu.vn

comprehension, addressing current limitations is crucial to optimizing their effectiveness. This study underscores the importance of using mobile language learning tools like Duolingo to meet the evolving needs of language learners in an education landscape increasingly driven by technology, where listening comprehension plays a vital role in the learning and language proficiency enhancement process.

Keywords: Duolingo Mobile Applications, listening comprehension performances, EFL students

1. Introduction

1.1 Background of the Study

In the present interconnected world, proficiency in English as a Foreign Language (EFL) has become increasingly essential, serving as a gateway to academic, professional, and social opportunities. Within the spectrum of language skills, listening comprehension plays a crucial role, facilitating effective communication, understanding of spoken language, and overall language acquisition. However, mastering listening skills poses significant challenges for the majority of EFL students, primarily due to limited exposure to authentic language input and insufficient opportunities for practice in real-life settings. Traditional methods of language instruction often struggle to fully address these challenges. However, the emergence of digital technologies has opened up new avenues in language education and learning. Mobile applications, in particular, have emerged as revolutionary tools due to their unparalleled accessibility, flexibility, and interactivity.

Among these applications, Duolingo has garnered widespread popularity for its user-friendly interface and ramified approach to language learning. Mobile technology has significantly reshaped the landscape of language education, providing students with unprecedented access to educational resources. Duolingo, launched in 2012, exemplifies this shift as a leading example of mobile-assisted language learning (MALL). With courses available in 27 languages and accessible across web and mobile platforms, Duolingo has become a global phenomenon (Hazar, E., 2022).

Despite the proliferation of mobile applications like Duolingo, empirical evidence regarding their effectiveness in improving listening comprehension remains scarce, particularly within the context of EFL education. Previous research has primarily focused on evaluating the effectiveness of traditional classroom-based instruction and computer-assisted language learning (CALL) programs, leaving a gap in understanding the potential of mobile applications for enhancing listening skills. Therefore, this study seeks to address this gap by examining the role of Duolingo Mobile Applications in improving EFL students' listening comprehension performances.

By examining the impact of Duolingo's listening exercises on students' comprehension abilities and exploring their perception of using Duolingo Listening Applications, this research aims to contribute empirical insights to the ongoing discourse on technology and enhanced language learning. Duolingo's approach to language

learning is grounded in the principles of gratification, making learning engaging and enjoyable for users. According to Hazar, E. (2022), the application is structured into sections such as skills, skill-related illustrations, and words, incorporating activities for beginners that cover fundamental language skills including listening, speaking, reading, and writing.

Duolingo's unique feature of allowing users to record and play back their voices, receive feedback, and share responses with others online, facilitates a more interactive and immersive learning experience. Duolingo Mobile Applications incorporate a range of exercises designed to enhance various language skills, including listening comprehension. These exercises leverage media resources, such as audio recordings of native speakers, interactive quizzes, and real-life scenarios, to immerse students in authentic language experiences. Hazar, E. (2022) believes that by integrating elements of gratification, such as progress tracking, achievements, and rewards, Duolingo strives to make language learning an engaging and enjoyable experience.

Despite its popularity and effectiveness in improving language skills, Duolingo has been criticized for its reliance on translation, which may not fully prepare students for real-life language use. The application's teaching approach, which involves translating content into the student's native language, has been both praised and criticized for its educational value. While it has been argued that how translation is used can be beneficial for students, the application's approach may not fully equip students with the necessary skills for independent language use. Additionally, the lack of human interaction and authentic conversation within the application has been identified as a limitation. This aspect is crucial for developing fluency and understanding the nuances of language use, which are often better learned through direct interaction with native speakers.

This study aims to explore the effectiveness of Duolingo in improving EFL students' listening comprehension skills, identifying the application's resources and limitations. By examining the application's features and the learning outcomes of its users, this research seeks to provide insights into how Duolingo can be optimized to better support EFL students in achieving their language learning goals.

1.2 Research Aims

This study is designed to accomplish two primary objectives: Firstly, it seeks to assess the extent to which Duolingo Mobile Applications contribute to the enhancement of listening comprehension performances among EFL students. Secondly, it aims to scrutinize the perceptions of EFL students concerning the efficacy of Duolingo Listening Apps in bolstering their listening comprehension abilities.

1.3 Research Questions

To address the research objectives, the following questions will guide the investigation:

- 1) To what extent do Duolingo Mobile Applications improve EFL students' listening comprehension performances?

- 2) What are EFL students' perceptions of the effectiveness of Duolingo Mobile Applications in enhancing their listening comprehension abilities?

1.4 Significance of the Study

This study holds significance for various stakeholders in language education. By providing empirical insights into the effectiveness of Duolingo Mobile Applications for improving listening comprehension, this research contributes to the existing literature on technology-enhanced language learning. Additionally, findings from this study may inform language educators, curriculum developers, and policymakers in designing and implementing effective language learning programs that integrate mobile technology. The information collection subjects are from three High-Quality EFL classes, adding depth and specificity to the study's findings.

1.5 Scope of the Study

This study focuses specifically on assessing the impact of Duolingo Mobile Applications on EFL students' listening comprehension performances and their perceptions of using Duolingo Listening Apps for this purpose. While recognizing the importance of other language skills, such as speaking, reading, and writing, this research confines its scope to the evaluation of listening comprehension outcomes resulting from engagement with Duolingo's listening exercises.

2. Literature Review

2.1 Theoretical Framework

2.1.1 Definition and Importance of Listening Skills in EFL Learning

Listening skills are indispensable in the journey of acquiring and mastering a second language (L2), serving as a cornerstone for overall language proficiency. Metruk (2018) underscores their significance in English as a Foreign Language (EFL) learning, noting that they are a primary prerequisite for speaking proficiency. Guo and Wills (2006) emphasize the pivotal role of listening in daily communication and learning, as it constitutes a significant portion of human interaction and education. Moreover, Anderson and Lynch (2003) highlight the criticality of efficient listening skills in both familiar and unfamiliar environments, underscoring their importance for effective communication. In educational settings, listening is paramount for language acquisition and classroom interaction. Rost (1994) elucidates its significance by stating that it provides vital input for learners, facilitates interaction, exposes learners to authentic language usage, and enables teachers to introduce new language forms effectively. Wallace, Stariha, and Walberg (2004) further emphasize its role in learning, as it allows students to receive information and gain insights.

Various scholars provide nuanced definitions of listening comprehension. Underwood (1989) simplifies it as the act of deriving meaning from auditory stimuli, while O'Malley, Chamot, and Kupper (1989) describe it as an active and conscious

process involving the construction of meaning through contextual cues and strategic resources. Purdy (1997) characterizes listening as an active and dynamic process of attending, perceiving, interpreting, remembering, and responding to human expressions. Rost (2002) views it as a complex process of receiving, constructing meaning, negotiating understanding, and responding sympathetically. Effective listening, as described by Shen *et al.* (2007), requires active involvement, effort, and practice in understanding thoughts, feelings, and intentions. In essence, listening comprehension goes beyond passive reception; it involves actively assigning both literal and intended meanings to utterances, aligning perceived meaning with the intended meaning. Therefore, it plays a vital role in facilitating effective communication and language acquisition.

Expanding upon the significance of listening in language acquisition, it is essential to recognize its multifaceted nature. Listening proficiency not only aids in understanding spoken language but also enables learners to interpret nuances, comprehend varying speech speeds, and discern the intentions behind verbal cues. As learners engage in listening activities, they decode linguistic forms, integrate contextual information, and employ strategic resources to derive meaning effectively. Furthermore, effective listening fosters interaction and empathy, allowing individuals to connect with speakers on a deeper level and respond appropriately to their expressions.

Moreover, the importance of listening extends beyond the classroom, permeating various aspects of daily life. In social settings, proficient listeners demonstrate active engagement, understanding, and responsiveness, fostering meaningful communication and interpersonal connections. Additionally, in professional environments, strong listening skills are invaluable for effective collaboration, problem-solving, and leadership. By attentively listening to colleagues, clients, or stakeholders, individuals can gather valuable insights, address concerns, and make informed decisions.

Overall, listening comprehension serves as a linchpin in language learning and communication, shaping learners' ability to engage meaningfully with spoken language and navigate diverse linguistic contexts. As educators and learners alike recognize its pivotal role, efforts to enhance listening proficiency can significantly contribute to overall language acquisition and proficiency.

2.1.2 Theoretical Underpinnings of Listening Comprehension in Language Learning

Hypothetical underpinnings explain the intricacy of listening perception, underlining its multi-layered nature inside language learning settings. Mental methodologies include the dynamic utilization of semantic information and handling abilities to really translate and decipher hearable information. Meta-cognitive systems, then again, involve the higher-request mental cycles that work with self-guideline and observing of perception, empowering students to adjust their listening methodologies in light of the apparent trouble of the assignment or level of understanding. Moreover, sociolect-full of feeling methodologies assume a critical part in cultivating students' personal commitment and inspiration, subsequently impacting their openness to hearable boosts and in general learning results (Abdolrezapour and Ghanbari, 2021).

2.1.2.1. Definition and Significance of Listening Perception

Listening cognizance fills in as a foundation in language picking up, working with the comprehension of communicated in language and encouraging powerful correspondence in different etymological settings, especially in English as an Unknown dialect (EFL) settings.

2.1.2.2 Hypothetical Models and Structures

Hypothetical models, for example, the Combined Correspondence Model and Intuitive Correspondence Model, offer important bits of knowledge into the mental and sociolect-full of feeling processes hidden listening cognizance, revealing insight into its importance in language securing and capability improvement.

2.1.2.3. Mental Cycles Included

Listening understanding envelops mind-boggling mental cycles, including hear-able discernment, phonetic handling, and memory recovery, which by and large add to the development of importance from hear-able info.

2.1.2.4. Challenges in Listening Cognizance

EFL students experience different difficulties, like hardships in emphasizing acknowledgment, restricted jargon capability, and understanding of perplexing syntactic designs, which hinder their capacity to actually appreciate communication in the language.

2.1.2.5. Procedures for Improving Listening Cognizance

Carrying out powerful methodologies, for example, utilizing innovation-driven stages like the Duolingo application gives students organized and drawing in valuable chances to work on listening appreciation abilities while focusing on unambiguous mental cycles critical for perception.

2.1.2.6. Job of Innovation in Language Learning

Innovation, exemplified by portable applications like Duolingo, offers imaginative highlights and intelligent learning conditions that advance dynamic commitment and work with the improvement of listening perception abilities through ramified practices and versatile criticism components.

2.1.2.7. Suggestions for Language Schooling

Teachers can use hypothetical bits of knowledge and mechanical headway to plan student-focused academic methodologies that coordinate listening appreciation exercises flawlessly into the educational program, cultivating comprehensive language advancement and upgrading understudies' open capability in EFL settings.

All in all, a complete comprehension of the hypothetical establishments and successful usage of innovation, for example, the Duolingo application, can essentially

upgrade EFL understudies' listening cognizance exhibitions, subsequently encouraging their general language capability and open skill in different semantic settings.

2.1.3 Importance of Listening Skills for Language Proficiency and Communication

Metruk (2018) emphasizes the broad significance of listening skills beyond the confines of the classroom, affirming their crucial role in language proficiency and effective communication. Extensive listening practice, including immersion in authentic language materials outside traditional learning environments, has proven instrumental in enhancing students' performance and attitudes towards language acquisition. This practice not only sharpens listening comprehension but also fosters a deeper understanding of language and its cultural nuances. The persuasive impact of extensive listening is particularly potent when students are empowered to select materials aligned with their interests, exposing them to diverse language contexts and enriching their learning journey.

Moreover, integrating listening skills into the broader context of language learning contributes to the development of overall communication skills and language proficiency. This holistic approach highlights the significance of listening abilities in facilitating effective communication in the target language. By prioritizing the development of listening skills, educators provide students with essential tools to navigate real-world language use adeptly, thereby propelling their journey towards linguistic proficiency.

In general, the theoretical framework of this study underscores the vital role of listening skills in English as a Foreign Language (EFL) learning, emphasizing the importance of extensive listening practice and the application of mental, meta-cognitive, and sociolect-emotional strategies in enhancing listening comprehension. This framework provides a solid foundation for examining the impact of Duolingo's mobile applications on enhancing EFL students' listening comprehension performances, offering valuable insights into the potential of technology to support foundational language skills. Listening skills serve as a cornerstone in language learning, particularly for EFL students, facilitating effective communication by enabling students to grasp the phonological, lexical, syntactic, semantic, and pragmatic aspects of the target language. According to Deregözü (2021), listening contributes to approximately 80% of our knowledge acquisition, underscoring its fundamental importance in the learning experience.

Jiang's (2021, November 11) article discusses Duolingo's effectiveness in teaching receptive skills like listening and comprehension. The interactive activities offered by Duolingo engage students actively, facilitating comprehension and understanding—however, the platform's effectiveness in teaching productive skills like speaking warrants further investigation. Jiang (2021, November 11) observed that Duolingo learners with minimal prior language knowledge achieved speaking proficiency gradually with the platform's expectations.

Deregözü (2021) emphasizes the critical role of using listening comprehension strategies, particularly in distance education settings with limited face-to-face

interactions. Research indicates that students in distance learning programs demonstrate reasonably effective listening comprehension skills in foreign language acquisition. Furthermore, gender-based differences in strategy usage underscore the importance of tailoring instructional approaches to accommodate diverse learning styles and preferences, including gender-specific considerations. Additionally, raising awareness of native language listening strategies can facilitate their transfer to the second language (L2), fostering more native-like processing and enhancing listening comprehension in the L2. Suggestions for educators include increasing listening time in L2 classes, emphasizing listening activities, and nurturing deliberate listening strategies.

In summary, listening skills are critical for language proficiency and communication. Platforms like Duolingo have demonstrated effectiveness in teaching receptive skills, but their effectiveness in teaching productive skills remains under scrutiny. Considering individual differences, including gender, is crucial in implementing effective listening comprehension strategies, especially in distance education settings.

2.2 Mobile Applications in Language Learning

2.2.1 Overview of the Use of Mobile Applications in Language Learning

Portable applications have arisen as irreplaceable devices in the domain of language learning, especially taking care of the requirements of English as an Unknown dialect (EFL) understudies. Among these applications, Duolingo stands apart for its vivid and intelligent methodology, offering students a rich climate helpful for improving listening cognizance abilities. Prestigious for its inventive elements, Duolingo uses man-made consciousness (simulated intelligence) to give continuous criticism on different parts of communication in language, including articulation, familiarity, jargon utilization, and linguistic exactness. This customized criticism system, as featured by Qiao and Zhao (2023), is supplemented by gratification components that rouse clients to take part in ceaseless practice and cultivate a feeling of achievement.

Nonetheless, while portable language learning applications hold a guarantee for upsetting language training, Heil (2016) argues that they presently miss the mark in a few key regions. His examination assessing the best fifty financially accessible language learning applications uncovers three predominant patterns. Right off the bat, these applications frequently center around showing jargon in separated units as opposed to insignificant settings. Also, they show negligible versatility to individual students' capability levels and learning styles. Thirdly, the arrangement of informative remedial criticism to students stays scant, mirroring a dominant behaviourist way of dealing with language learning.

Considering these discoveries, there is a pressing need to adjust versatile language learning applications to principles of Second Language Acquisition (SLA) and instructive exploration in the field of second language learning. This involves coordinating more contextualized language learning materials, utilizing versatile innovation to take special care of individual student needs, and integrating logical criticism components into

application functionalities. By embracing these improvements, portable language learning applications can all the more likely help successful language procurement and address the advancing necessities of language students in the present computerized age.

2.2.2 Advantages and Limitations of Mobile Applications

Here are the advantages of Mobile Learning:

Mobile learning, often referred to as m-learning, has emerged as a powerful tool in education, offering numerous benefits for students and teachers alike. The flexibility, accessibility, and interactivity of cell phones make them valuable assets in the learning experience.

- 1) **Accessibility and Convenience:** Past basically getting to instructive substance, versatile learning empowers understudies to draw in with learning materials in different conditions, for example, during drives, breaks at work, or while voyaging. This adaptability permits people to integrate learning into their day-to-day schedules, amplifying their time and efficiency.
- 2) **Flexibility in Learning Styles:** Portable learning stages frequently offer adaptable learning ways and assets, permitting understudies to fit their growth opportunities to their inclinations and requirements. For instance, visual students might be inclined toward video instructional exercises, while hear-able students might select web recordings or sound talks.
- 3) **Personalized Learning Experience:** as well as giving customized suggestions, versatile learning stages can follow understudy progress after some time, recognizing solid areas and shortcomings. In view of this information, versatile learning calculations can change the trouble level and content conveyance to advance learning results for every individual understudy.
- 4) **Interactivity and Engagement:** Portable learning energizes dynamic support through ramified components, intelligent tests, and mixed media content. Highlights like intuitive exercises, interactive recreations, and vivid augmented simulation encounters upgrade commitment and make learning more charming and vital.
- 5) **Collaborative Learning Opportunities:** While cell phones are in many cases seen as individual devices, they likewise work with joint effort among understudies. Through highlights like gathering visits, shared reports, and online discussions, students can trade thoughts, team up on projects, and give peer support, encouraging a feeling of local area and aggregate learning.
- 6) **Real-Time Criticism and Assessment:** Versatile learning stages offer quick input on tests, tasks, and activities, permitting understudies to measure their comprehension and progress continuously. This opportune criticism assists students with recognizing regions for development as well as builds up advancement by giving encouraging feedback to address replies.
- 7) **Cost-Adequacy and Versatility:** By utilizing existing innovations like cell phones and tablets, portable learning diminishes the requirement for exorbitant

equipment speculations and actual framework. Moreover, the adaptability of cell phones is considered to consistently mix with other instructive apparatuses and stages, boosting their utility and worth.

- 8) Lifelong Learning Opportunities: Portable learning enables people to seek persistent training and ability advancement all throughout their lives. Whether through web-based courses, language learning applications, or expert improvement assets, cell phones give admittance to an abundance of learning open doors past customary scholastic settings. This adaptability permits students to adjust to changing vocation requests and individual interests, guaranteeing continuous development and advancement. In addition to these benefits, mobile learning offers unparalleled opportunities for inclusive education. Accessibility features, such as screen readers and adjustable font sizes, empower students with disabilities to engage with content effectively, fostering an inclusive learning environment.

Furthermore, mobile learning facilitates real-time collaboration and communication, transcending geographical barriers and fostering global connectivity. Students can engage in collaborative projects and exchange ideas regardless of their physical location, enhancing essential 21st-century skills. Moreover, mobile learning enhances student autonomy and self-directed learning by providing access to a wealth of educational resources. Students can explore topics of interest, set personalized learning goals, and monitor their progress independently, nurturing critical thinking and decision-making skills.

Additionally, mobile learning opens doors to personalized instruction by utilizing adaptive learning algorithms. Educators can deliver tailored learning experiences that cater to individual learning styles and proficiency levels, maximizing engagement and mastery of learning objectives.

Finally, mobile learning promotes environmental sustainability by reducing the need for printed materials and minimizing carbon emissions associated with traditional classroom-based learning. Transitioning to digital resources and online platforms promotes eco-friendly educational practices.

In essence, the advantages of mobile learning extend beyond convenience and accessibility, encompassing exclusivity, global connectivity, student autonomy, personalized instruction, and environmental sustainability. By harnessing the transformative potential of mobile technology, educators can create dynamic and engaging learning environments that empower students to thrive in the digital age and beyond.

Below are the disadvantages of mobile learning:

In the present advanced age, cell phones have upset the scene of language getting the hang of, offering remarkable availability and adaptability. Notwithstanding, in the midst of the heap benefits, there exist huge difficulties that block the consistent combination of versatile helped language learning (shopping center) into instructive systems. From the limitations of gadget size to worries in regards to security, cost, and

restricted collaboration open doors, a bunch of hindrances frustrate the acknowledgment of the shopping center's maximum capacity. Tending to these difficulties requires a complete methodology that incorporates mechanical development, educational variation, and strategy intercessions. By defeating these hindrances, we can open the ground-breaking force of the shopping center, enabling students to accomplish their language-obtaining objectives across assorted settings and conditions.

- 1) **Gadget Impediments:** The minimized size of versatile screens presents difficulties for perusing and reviewing content, especially for people with visual weaknesses or those familiar with bigger screens. This impediment might obstruct the compelling cognizance and commitment to learning materials, influencing the general opportunity for growth. Moreover, the usefulness of cell phones might be restricted by their handling power and capacity limit, obliging the kinds of mixed media content that can be gotten to and used for language learning purposes.
- 2) **Security and Unwavering Quality Worries:** Cell phones are vulnerable to robbery, misfortune, or harm, which can endanger admittance to learning materials and individual information. Besides, availability issues, for example, powerless organization signs or interference, may disturb the educational experience, causing disappointment and obstructing the fulfilment of language learning assignments. These security and dependability concerns sabotage the consistent and continuous growth opportunities that are fundamental for viable language obtaining.
- 3) **Cost Suggestions:** While cell phones offer unrivalled comfort and openness, their moderation remains a critical hindrance for some students, especially those from financially distraught foundations. The forthright expenses of buying cell phones or tablets, alongside progressing costs for information plans and application memberships, may overwhelm students and their families, restricting their capacity to completely take part in versatile helped language learning drives.
- 4) **Input Difficulties:** The info capacities of cell phones, like touchscreens and virtual consoles, may present difficulties for students, particularly while participating in exercises that require broad message input, for example, composing expositions or partaking in visit-based conversations. The restrictions of versatile info techniques might upset the improvement of language abilities that depend vigorously on composed correspondence, possibly obstructing students' general language capability.
- 5) **Cost of Instructive Applications:** While there are plenty of instructive applications accessible for language learning, a considerable lot of them accompany a sticker price, expecting students to pay for admittance to premium elements or content. This paywall may hinder a few students, especially those with restricted monetary assets, from getting to great language learning materials, worsening variations in instructive open doors and results.
- 6) **Restricted Correspondence Execution Backing:** A few portable applications might focus on individual learning exercises over intuitive correspondence and

coordinated effort, bringing about an absence of help for creating relational abilities in genuine settings. Students might pass up amazing open doors for significant communication with friends and teachers, frustrating the advancement of oral capability and linguistics ability in the objective language.

- 7) **Reliance on Web Network:** Portable learning is vigorously dependent on web availability for getting to online assets, downloading content, and partaking in intelligent exercises. In any case, students in regions with restricted or problematic web frameworks might confront huge difficulties in getting to learning materials and finishing the web responsibilities, prompting aberrations in learning results in light of geological area and admittance to innovation.
- 8) **Restricted Social Cooperation:** While some portable applications consolidate online entertainment elements or conversation gatherings to work with peer association and cooperative learning, the profundity and nature of social connection may not completely recreate the lavishness of up close and personal correspondence in customary study hall settings. Students might pass up open doors for unconstrained communication, socialization, and social trade, which are necessary for language learning and intercultural capability improvement.

Tending to these difficulties requires a multi-layered approach that consolidates mechanical development, instructive variation, and strategy mediation to guarantee that versatile learning stays a comprehensive, compelling, and impartial instrument for language schooling. By moderating gadget limits, further developing web networks, decreasing expense obstructions, and upgrading support for correspondence and joint effort, versatile helped language learning realize its true capacity as an extraordinary power in language training, engaging students to accomplish their language learning objectives in different settings and settings.

2.2.3 Related Studies

Research has shown that mobile-assisted language learning (MALL) is efficacious in teaching/learning ESL/EFL listening skills. Studies have indicated a significant difference in listening comprehension scores between pre- and post-application use, suggesting that MALL can effectively enhance EFL students' listening skills [9]. Furthermore, the integration of mobile devices in educational settings has been positively received by high school learners in Vietnam, indicating their readiness to adopt these tools for skill development by Islam (2020).

Peláez-Sánchez (2023) said that in the context of Duolingo, studies have demonstrated its positive impact on students' vocabulary mastery and learning motivation. However, it's noted that while Duolingo can significantly improve vocabulary and motivate learners, it may not be as effective in fostering competitiveness among students. Nushi (2017) underscores the transformative impact of mobile applications, particularly Duolingo, on language learning, delineating a spectrum of benefits and challenges intrinsic to their adoption. This elucidation draws from empirical evidence highlighting Duolingo's preeminence as the foremost application in the

Education category on Google Play, substantiating its efficacy in facilitating significant advancements in language proficiency among users. Through its gratification paradigm, Duolingo adeptly sustains learner engagement and mitigates inhibitions, thereby fostering accessibility and engendering a more enjoyable learning experience.

The instructional methodology underpinning Duolingo, which pivots on teaching through translation, evokes divergent perspectives encompassing both commendations and critiques. Proponents contend that translation serves as a scaffold, facilitating the assimilation of new knowledge within existing cognitive frameworks, assuaging learner apprehensions, and fostering critical linguistic awareness. However, detractors voice apprehensions regarding the app's reliance on translation, cautioning against the potential pitfalls of fostering a spurious sense of linguistic equivalence and impeding the development of fluid language proficiency. Amidst these debates, Duolingo remains lauded for its intuitive interface and adaptability to learners hailing from diverse cultural and linguistic backgrounds. Its structured and systematic approach to self-guided learning proves indispensable for language acquisition endeavors, albeit occasionally diverging from conventional pedagogical paradigms like Communicative Language Teaching and Task-based Language Teaching due to its entrenched focus on direct translation.

Nevertheless, while Duolingo effectively broadens learners' lexical repertoire and bolsters their confidence, its efficacy is tempered by certain deficiencies. Notably, the platform's limited provision of comprehensive grammatical explanations and dearth of opportunities for authentic conversation pose significant hurdles to learners' attainment of nuanced grammatical and phonological proficiency essential for effective communication.

In summation, while mobile applications like Duolingo herald a paradigm shift in language learning, offering unparalleled avenues for enhancing vocabulary acquisition and motivation, they concurrently present intrinsic challenges. Nushi (2017) accentuates these challenges, ranging from reliance on translation to deficits in grammatical instruction and interpersonal interaction. Nonetheless, Duolingo's innovative pedagogical approach underscores the transformative potential of mobile applications in revolutionizing language education paradigms.

2.3 Importance of Listening Comprehension in EFL

2.3.1 How Crucial Listening Comprehension in Language Acquisition Is

Both Gilakjani (2016) and Renukadevi (2014) highlight the significant job of listening cognizance during the time spent securing language, especially concerning English as an Unknown dialect (EFL) learning. Listening perception, they declare, fills in as foundation expertise fundamental for powerful correspondence, enveloping the capacity to figure out communication in language at its normal speed and in different settings. This expertise isn't just inactive; however, it includes a complex mental interaction that incorporates hearable separation, cognizance of aural sentence structure, determination and maintenance of pertinent data, and the union of sound and importance.

Inside the multifaceted course of listening appreciation, students are expected to interpret discourse sounds, decipher the implications of individual words, and handle the grammatical design of sentences. Besides, this expertise assumes a pivotal part in procuring elocution precision, understanding word pressure designs, growing vocation expansiveness, and dominating syntactic standards. Besides, it empowers students to decipher nuanced parts of correspondence, like manner of speaking, and pitch varieties, and emphasize subtleties, which are basic to fathoming the planned message precisely. The meaning of capable listening cognizance abilities couldn't possibly be more significant in language learning attempts.

The two researchers underline that without sufficient dominance of this expertise, students might experience significant deterrents in their language procurement venture, hindering their advancement toward accomplishing open capability and by and large capability in the objective language. In this manner, cultivating and refining listening perception capacities remains as a basic goal in the EFL teaching method, fundamental for enabling students to connect successfully, all things considered, open circumstances and explore the intricacies of intercultural correspondence with certainty and capability. Listening cognizance remains as a foundation expertise in language obtaining, especially for EFL students. In spite of its primary significance, it frequently gets deficient consideration in the language learning educational program. This oversight, explained by Cheung (2018), is apparent in numerous EFL homerooms, where understudies dominantly participate in paying attention to the educator's recitation of English texts. This approach encourages superfluous uneasiness as well as obstructs expertise procurement.

Cheung further portrays the complexities engaged with listening comprehension, featuring the need of simultaneously explore phonology, grammar, jargon, social setting, and hear-able memory to really get a handle on second language expressions. Perceiving the criticality of expressly showing listening abilities is basic, given the predominant trouble people experience in knowing where to start tuning in, frequently bringing about disarray and lessening understanding.

In spite of its critical job, listening perception remains undervalued in language learning educational plans, sustaining formative difficulties. Notwithstanding, by recognizing and tending to these obstacles, instructors hold the possibility to especially improve language learning results for EFL understudies. Underlining the meaning of listening cognizance and incorporating intuitive and vivid opportunities for growth worked with by portable applications like Duolingo arises as a promising methodology to support EFL understudies' listening capability.

2.3.2 Challenges Faced by EFL Students in Developing Listening Comprehension Skills

EFL understudies experience huge obstacles in their excursion to refine their listening cognizance abilities, as enlightened by Gilakjani (2016) and Gilakjani (2014). A focal concern emerges from the absence of accentuation on listening capability inside

instructive systems, where the concentration frequently floats towards composing, perusing, and jargon development. This unevenness sidelines a critical expertise as well as blocks its development. Gilakjani (2014) digs into the horde factors compounding these difficulties for non-native English speakers. Among these variables, the quick speed of discourse conveyance arises as a considerable snag, overpowering students and hindering their capacity to successfully process information. Moreover, experiencing new jargon and ideas during listening undertakings demonstrates overwhelming, prompting comprehension obstacles.

Elocution varieties and different accents further compound these difficulties, requiring students to navigate through an assorted array of enunciation and phonetic patterns. Wrestling with these semantic complexities presents significant obstacles, especially while navigating through varied linguistic settings. Besides, the actual environment wherein listening exercises unfold assumes a pivotal role, with factors such as surrounding noise levels and interruptions potentially blocking concentration and hindering comprehension. The range of difficulties standing up to EFL understudies in their mission to foster listening perception abilities is broad and diverse, fundamentally shaping their language acquisition journey and overall proficiency achievement. First among these challenges is the speed at which information is dispersed in spoken language. Native speakers often communicate at a speed that exceeds the comfort zone of non-native students, leading to challenges in keeping up with conversations and grasping the essence of spoken words. This challenge is keenly felt in mobile learning applications like Duolingo, where the learning pace may not necessarily align with the user's proficiency level.

Moreover, wrestling with and retaining novel vocabulary and concepts common in everyday speech poses another significant obstacle. EFL students might find it challenging to understand and retain new terms, which in turn affects their ability to follow conversational threads and interpret underlying messages. Pronunciation discrepancies and various accents also present considerable hurdles for EFL learners, as they navigate through a multitude of accent and pronunciation styles among native speakers. This complexity may blur distinctions among words and sounds, ultimately hindering comprehension of the intended message.

Furthermore, the physical environment in which learning unfolds plays a vital role in listening comprehension improvement. Ambient noise levels, background disturbances, and interruptions can all impede students' focus, thereby undermining their ability to effectively absorb and interpret information. Limited opportunities for real-world practice and inadequate feedback mechanisms act as additional barriers to listening skill development. EFL students often find themselves lacking ample opportunities to apply their acquired knowledge in real-life situations, which hampers the consolidation of their listening skills.

Overall, addressing the variety of challenges faced by EFL students in their endeavor to enhance listening comprehension skills requires a holistic approach. This approach should encompass adjustments to the learning pace, structured exposure to

vocabulary and concepts, and the provision of ample practice and feedback opportunities to facilitate skill refinement and proficiency attainment.

2.3.3 The Benefits of Improving EFL Students' Listening Comprehension Abilities

Further developing the listening comprehension capacities of English as an Unknown dialect (EFL) understudies is basic inside the instructive space, given its diverse advantages enveloping semantic capability, open viability, and social sharpness. Fundamental to these benefits is the upgrade of successful correspondence, wherein elevated listening abilities enable students to unravel and answer spoken talk, working with significant communication in real settings. This fundamental ability not only speeds up the absorption of new semantic builds yet in addition expands the maintenance of gained information, subsequently catalyzing the general language procurement direction.

Besides, the openness to local speakers innate in listening exercises encourages a nuanced comprehension of social complexities, colloquial articulations, and linguistics standards that rise above the limits of composed language. Such submersion in valid open settings improves the language-obtaining experience as well as causes a more profound appreciation for the social embroidery supporting the objective language. By drawing in with communication in English in different settings, EFL understudies can zero in on grasping language subtleties, sounds, and accents, improving their social getting it and making them more agreeable in multicultural conditions. Besides, the refinement of elocution and highlight worked with through the copying of local discourse designs remains as a huge conclusion of further developed listening cognizance. By adjusting their hearable resources to the right inflexion, stress, and musical rhythm of the language, students can try towards a more colloquial and capable method of articulation.

Clear and intensified homeroom sound guarantees that EFL understudies can hear the educator's communication in English at a suitable volume and with legitimate elocution. This predictable openness upholds the improvement of their own discourse examples, pitch, and articulation, assisting them with sounding more like local speakers.

Couple, the job of listening cognizance in supporting jargon procurement and linguistic capability couldn't possibly be more significant. Through the dynamic commitment with spoken talk, students manage the cost of the chance to incorporate lexical things and syntactic designs in the setting, subsequently bracing their phonetic collection with a different cluster of etymological assets. Paying attention to local speakers improves social comprehension by giving experiences into social subtleties, informal articulations, and language use past what is passed on through-composed text. In summation, the development of listening comprehension capability possesses a significant speciality in the educational scene of EFL schooling, outfitting students with a hearty groundwork whereupon to build their semantic ability and open viability.

Notwithstanding its undeniable import, in any case, the centrality of this expertise frequently remains underestimated inside conventional language learning ideal models.

Consequently, good sense would suggest that instructors should accord due acknowledgement to the impressiveness of listening appreciation and coordinate designated listening practices into the educational milieu, in this way enabling EFL students to navigate the direction towards etymological familiarity and intercultural ability with adequacy and certainty.

2.4 Duolingo Mobile Applications

2.4.1 Overview of Duolingo and its Features

In a general sense established in a natural and ramified interface, Duolingo encapsulates an organized structure for language obtaining, obliging students across a range of capability levels. Through the use of expertise trees as hierarchical frameworks, Duolingo coordinates a fastidiously organized movement of illustrations, each carefully intended to embrace a different exhibit of etymological subjects and ideas. Quite, these examples exemplify a purposeful movement in intricacy, working with gradual expertise improvement in jargon securing, linguistic capability, and grammatical development. Integrating a rich collection of instructive activities crossing listening comprehension exercises, cheat sheet bores, various decision evaluations, and talking commitment, Duolingo takes care of a heap of learning modalities. This instructive variety, as clarified by Johnson (2024), not only obliges the variegated mental inclinations and aptitudes of students yet in addition encourages an intuitive and dynamic learning milieu helpful for supported commitment.

For sure, as Johnson's piece recommends, Duolingo remains as a quintessential model of contemporary language learning philosophies, consistently mixing mechanical development with instructive viability. Its unavoidable impact inside the space of language obtaining implies an original achievement in the development of computerized learning stages, reshaping regular ideal models and democratizing admittance to language training on a worldwide scale.

Here are key highlights of Duolingo:

- 1) Scaled-down Examples: Duolingo embraces a particular way to deal with language picking, dismantling illustrations into sensible units involving talking, tuning in, perusing, and composing works out. These compact modules are nicely created to enrapture clients' advantage and oblige individual learning paces.
- 2) Gamification: By implanting gratification components, for example, rewards and in-game cash, Duolingo enhances client inspiration and satisfaction. As clients progress, they accumulate jewels and experience focuses, opening extra highlights and invigorating their learning process.
- 3) Organized Learning Way: Duolingo carefully structures its educational program, with every illustration expanding upon its ancestors. This consecutive direction guarantees moderate ability advancement, directing clients from simple jargon and syntax to more many-sided language constructs.
- 4) Duolingo Stories and Podcasts: In a bid to enhance listening comprehension and encourage social submersion, Duolingo proffers stories and web recordings

narrated by native speakers. These vivid assets outfit genuine language settings, supporting clients in refining their listening abilities and knowing unobtrusive etymological subtleties.

- 5) Customizable Opportunity for growth: Duolingo manages the cost of clients' independence to tailor their learning direction in view of individual yearnings, timetables, and inclinations. With arrangements for defining day-to-day objectives and choosing learning powers, Duolingo takes special care of different learning styles and commitments.
- 6) Community and Social Features: Duolingo develops a feeling of the local area through intuitive functionalities, for example, competitor lists and client associations. This social aspect develops brotherhood and sound contest among clients, reinforcing inspiration and supported commitment.
- 7) Accessibility and Versatility: Designed to oblige a different client base, Duolingo guarantees availability and flexibility for students crossing all age gatherings and capability levels. With its dynamic acclimation to individual learning paces and personalized practice, Duolingo enables clients to explore their language acquisition journey with effectiveness and confidence.

All in all, Duolingo remains as a paragon of greatness in the domain of language learning stages, embodying an agreeable combination of mechanical development and educational viability. Through its intuitive interaction point and structured structure, Duolingo takes special care of students of all capability levels, working with gradual expertise improvement and fostering a unique learning climate characterized by engagement and interactivity. With its different array of educational activities and immersive content offerings like stories and podcasts, Duolingo transcends conventional boundaries, creating a holistic language learning opportunity that extends beyond mere rote memorization.

Besides, its emphasis on gratification and community engagement features a commitment to fostering motivation and collaboration among students, thus strengthening their resolve to embark on and sustain their language acquisition journey. As Duolingo continues to evolve and improve, its unwavering dedication to enhancing user experience and facilitating real-world language applications reaffirms its status as a trailblazer in the field of digital language education. With its transformative impact on students worldwide, Duolingo stands as a testament to the power of technology in democratizing access to language learning and empowering individuals to unlock their linguistic potential.

Generally, Duolingo's process represents the groundbreaking capability of digital learning platforms in reshaping the landscape of language education, inspiring students to embark on a journey of discovery, growth, and cultural enrichment. As we look towards the future, the legacy of Duolingo serves as a beacon of inspiration, illuminating the path towards a more inclusive, interconnected, and linguistically diverse world.

2.4.2 Analysis of Duolingo's Effectiveness as a Language Learning Tool

Duolingo's viability as a language learning instrument is carefully assessed through a vigorous structure involving four key aspects: commitment, application, capability, and the accomplishment of learning objectives. This structure, as explained by Jiang (2022), highlights the state's responsibility not exclusively to give a charming and vivid growth opportunity yet in addition to outfit students with the essential abilities for certifiable correspondence and accomplishment of their language capability goals.

Commitment remains as the central mainstay of Duolingo's adequacy evaluation, measuring students' impression of the application's pleasure, commitment, and utility. By requesting direct input through client experience meetings, overviews, and application utilization information examination, Duolingo attempts to determine the degree to which students get fulfilment and interest from the educational experience, accordingly recognizing regions for refinement to improve commitment. Moving past simple commitment, Duolingo's adequacy structure likewise examines the utilization of obtained language abilities in true settings. Research studies, as illustrated by Jiang (2022), include evaluating students' capacity to move acquired abilities to genuine situations, for example, travel-related errands or regular correspondence circumstances. This observational methodology empowers Duolingo to find out the reasonable utility and materialism of the language abilities granted inside the application.

Plus, the assessment of capability is a vital feature of Duolingo's viability system, adjusting its courses to the universally perceived Normal European Structure of Reference (CEFR) for language capability. By leading thorough examination reviews and autonomous language tests, Duolingo assesses students' language capacities at various phases of the course, guaranteeing arrangement with their ideal capability levels and working with the achievement of different language learning objectives.

Significantly, the last element of Duolingo's adequacy appraisal focuses on the accomplishment of learning targets, enveloping students' ability to use procured language abilities for successful correspondence and achievement of explicit language learning objectives. Through fastidious assessment of students' exhibition in sensible circumstances opposite their goals, Duolingo perceives regions requiring improvement to more readily uphold students in their language learning tries.

In outline, as expressed by Jiang (2022), Duolingo's viability as a language learning device rises above simple educational undertakings, encompassing a comprehensive assessment structure that focuses on commitment, application, capability, and the acknowledgment of learning objectives. This far-reaching approach highlights Duolingo's obligation to foster a balanced language growth opportunity, but with an acknowledgment, as placed by McDonald (2024) and Johnson (2024), of the likely advantages of enhancing Duolingo with beneficial assets for a more exhaustive phonetic improvement venture.

2.4.3 Utilizing Duolingo's Listening Exercises, Podcasts, and Stories to Enhance Listening Comprehension

Drawing upon the insights presented by Dastrup (2023) and Blanco (2022), Duolingo arose as a pioneer within the domain of language acquisition platforms, recognized by its essential integration of innovative features aimed at enhancing listening comprehension abilities. Chief among these features is DuoRadio, an immersive tool that offers users access to podcast-style audio narratives infused with captivating storytelling, skilfully crafted by Duolingo's vibrant characters. These stories are carefully structured to progressively escalate in complexity, precisely integrating real-time lesson content to reinforce users' grasp of vocabulary, phrases, and language concepts within a unique and engaging context. As users delve into these immersive audio experiences, they level up their listening skills as well as broaden their cultural understanding, making DuoRadio particularly beneficial for intermediate learners looking to refine their linguistic proficiency. Expanding Duolingo's arsenal of listening resources, both Duolingo Stories and the Duolingo Podcast stand as pillars of linguistic development. Within these platforms, users encounter authentic dialogue meticulously recorded by voice actors portraying individuals spanning diverse demographics in terms of age, gender, and speaking styles. This diverse tapestry of listening materials cunningly mirrors real-life situations, offering learners exposure to a myriad of linguistic nuances and accents encountered in everyday communication. By immersing themselves in these authentic settings, learners can sharpen their listening proficiency and navigate the intricate tapestry of cross-cultural communication with confidence and finesse.

Additionally, the innovative features incorporated into Duolingo's listening-centered approach extend beyond mere exposure to diverse audio content. With DuoRadio, Duolingo not only facilitates the development of listening skills but also fosters an appreciation for cultural diversity and linguistic subtlety. Through engaging storytelling and intelligently structured narratives, users embark on a journey of exploration and discovery, delving into the rich tapestry of language and culture that Duolingo seeks to illuminate.

Below are integrating Listening activities:

- 1) **Listening Activities:** Duolingo provides a plethora of listening exercises wherein users engage with native speakers and select the correct translations or answers based on auditory prompts. These activities manifest in various formats, encompassing word selection, sentence matching, and dialogue completion, thus catering to diverse learning preferences and proficiency levels.
- 2) **Podcasts:** Duolingo Podcasts afford users access to authentic stories in the target language, offering a diverse approach to improving listening comprehension. By exposing learners to different settings and accents, these podcasts facilitate the development of nuanced listening skills essential for effective communication.
- 3) **Listening Comprehension:** Embedded within Duolingo lessons are listening comprehension tasks, tasking users with interpreting short audio snippets and answering questions to assess how they comprehend key vocabulary and

language constructs. This interactive approach promotes active engagement with the language and enhances comprehension abilities.

- 4) **Stories:** Duolingo Stories present users with interactive narratives in the target language, fostering comprehension skills in an engaging format. As learners navigate through the storyline and make choices impacting the narrative direction, they actively apply listening comprehension techniques, thereby solidifying their linguistic proficiency.
- 5) **Progressive Difficulty:** As users progress through Duolingo lessons, listening exercises advance in complexity, presenting learners with challenges such as faster speech, complex sentence structures, and diverse accents. This incremental progression ensures continuous skill development and mastery of listening comprehension abilities.
- 6) **Repeat Audio:** Duolingo's provision for replaying audio snippets allows users to revisit and develop pronunciation nuances and comprehension of new terms. This iterative approach facilitates iterative learning and consolidation of listening skills over time.

In addition to its existing array of features aimed at improving listening comprehension, Duolingo could further enhance by incorporating the following elements:

- 1) **Interactive Dialogue Simulations:** Introduce interactive dialogue simulations where users engage in conversational exchanges with virtual characters. These simulations could present real-life scenarios like ordering food in a restaurant, asking for directions, or participating in a job interview, thereby providing practical listening practice in context.
- 2) **Voice Recognition Technology:** Implement voice recognition technology to provide real-time feedback on users' pronunciation and intonation. This feature could offer personalized suggestions for improvement and foster greater confidence in spoken language skills.
- 3) **Authentic Audio Snippets:** Expand the library of authentic audio snippets to encompass a wider range of accents, dialects, and speech patterns. This diversity in audio content would expose learners to the richness and variation of the target language, preparing them for real-world communication with speakers from different regions.
- 4) **Live Listening Sessions:** Introduce live listening sessions hosted by native speakers or language instructors, where users can participate in real-time listening activities and receive immediate feedback. These interactive sessions could focus on topics relevant to users and provide opportunities for active engagement and skill development.
- 5) **Cultural Contextualization:** Embed cultural contextualization within listening exercises by providing background information on the cultural significance of specific expressions, phrases, or customs. This holistic approach to language

learning would deepen students' understanding of the cultural nuances inherent in the language they are studying.

- 6) Collaborative Listening Challenges: Introduce collaborative listening challenges where users can collaborate with fellow learners to solve listening comprehension tasks together. This collaborative learning opportunity would foster a sense of community and encourage mutual support while enhancing listening skills.
- 7) Adaptive Learning Algorithms: Implement adaptive learning algorithms that tailor listening activities to users' proficiency levels and learning preferences. By dynamically adjusting the difficulty and content of listening tasks based on individual performance, Duolingo can provide a personalized learning experience that maximizes engagement and effectiveness.

By incorporating these innovative features into its platform, Duolingo can significantly enhance the listening comprehension experience for its users, thereby enabling them to achieve higher levels of fluency and confidence in the target language. With a focus on expanding its listening-centered offerings, Duolingo can cater to the varied needs and preferences of learners, ensuring a comprehensive and engaging language learning journey. DuoRadio, as a new addition, introduces captivating podcast-style audio stories featuring Duolingo's lively characters, designed to increase in complexity gradually. By incorporating vocabulary, phrases, and grammar points from recent lessons, these episodes provide learners with an opportunity to practice their listening skills in a fresh and immersive setting. Furthermore, Duolingo Stories and the Duolingo Podcast offer authentic speech recordings by voice actors portraying individuals of various ages, genders, and speaking styles. This diversity in content not only exposes learners to a wealth of linguistic nuances but also mirrors real-life situations, thereby enhancing cultural understanding and linguistic adaptability.

Additionally, the inclusion of interactive dialogue games would enable users to engage in conversational exchanges with virtual characters, simulating real-world scenarios such as ordering food or participating in a job interview. This hands-on approach to listening practice fosters effective language application and builds confidence in oral skills. Furthermore, the implementation of voice recognition technology could provide personalized feedback on pronunciation and intonation, facilitating more accurate language production and refining spoken proficiency. By offering live listening sessions led by native speakers or language instructors, Duolingo can create opportunities for users to participate in real-time listening activities and receive immediate feedback. These interactive sessions promote active engagement and encourage collaborative learning and peer support within the Duolingo community. Moreover, the integration of adaptive learning algorithms would allow Duolingo to tailor listening activities to individual proficiency levels and learning preferences, ensuring a personalized and effective learning experience for each user.

Overall, Duolingo's commitment to innovation and exclusivity in language learning makes it a versatile and indispensable tool for learners of all backgrounds and

skill levels. Through its dynamic and immersive platform, Duolingo empowers users to cultivate linguistic fluency, cultural competence, and confidence.

2.4.4 Enhancing Listening Skills Through Structured Utilization of the Duolingo Apps

Blanco (2022) and Gibson (2022) expand on Duolingo's efficient approach to further developing listening abilities, emphasizing its structured activities focused on gradually acclimating users to appreciating spoken language independently of written text. This deliberate progression is geared towards empowering learners to participate in real-life activities like listening to music, engaging in FaceTime conversations with familiar friends, or following content on platforms such as Twitch, all without relying on written translations. As users progress through the program, they encounter progressively challenging audio exercises, allowing them to refine their ability to comprehend spoken language with increasing accuracy.

In addition to its core activities, Duolingo's Audio Examples, as highlighted by Blanco and Gibson, play a significant role in leveling up conversational skills by offering tailored listening and speaking practice in everyday settings. By utilizing these features in a structured manner, users not only expand their vocabulary and grasp of grammar but also enhance their ability to understand and engage with spoken language in authentic settings.

Here is a step-by-step guide to getting started with Duolingo:

- 1) **Download and Install the Duolingo App:** Start by downloading the Duolingo app from the App Store (iOS) or Google Play Store (Android) and installing it on your device.
- 2) **Select Your Target Language:** Upon launching the app, choose the language you wish to learn from the wide array of options available on Duolingo.
- 3) **Complete Placement Test (Optional):** Taking the placement test can be beneficial for learners who have prior knowledge of the language. By assessing your proficiency level, you can avoid starting from scratch and instead begin at a point that matches your current skills. This personalized approach ensures that you are appropriately challenged and engaged with the material from the start.
- 4) **Start with Basics:** Delving into the foundational lessons presented by Duolingo is essential for building a strong groundwork in the language. These lessons cover key aspects such as basic vocabulary, grammar rules, and pronunciation. Starting with the basics provides a solid foundation upon which more advanced language skills can be developed.
- 5) **Engage in Listening Activities:** Listening exercises play a crucial role in enhancing your ability to comprehend spoken language. Duolingo offers a variety of listening tasks, including audio comprehension exercises and dialogue-based quizzes. These exercises expose you to different accents, speech patterns, and contexts, helping you develop a nuanced understanding of the language's auditory nuances.

- 6) Use Headphones: Enhance your auditory focus and immersion by using earphones or headphones during listening exercises, allowing you to discern pronunciation nuances and improve comprehension.
- 7) Repeat and Review: Take time to replay snippets and review vocabulary and sentences individually. Repetition is key to solidifying learning and developing understanding. By regularly revisiting material, you can reinforce your comprehension and improve retention, ultimately leading to greater proficiency in the language.
- 8) Explore Additional Listening Resources: Duolingo provides convenient features like Podcasts and Stories, which offer authentic audio content in your target language. These resources present real-life scenarios and engaging narratives, providing further opportunities to practice listening comprehension in a dynamic and immersive manner.
- 9) Practice Daily: Consistency is key to language learning success. Dedicate regular time to practice with the Duolingo app, even if only for short periods each day. Daily practice builds momentum and ensures steady progress towards your language learning goals.
- 10) Monitor Your Progress: Use the app's tracking tools to monitor your progress in listening skills over time. Keep track of your achievements, such as completing lessons or reaching specific proficiency levels. Celebrate milestones along the way and use them as motivation to keep pushing yourself to new heights in your language-learning journey.

In conclusion, Duolingo's structured approach to enhancing listening skills provides users with a comprehensive framework for developing proficiency in understanding spoken language. By gradually introducing learners to audio exercises and providing opportunities to practice in real-life scenarios, Duolingo enables individuals to truly engage with language.

Through consistent practice and utilization of beneficial resources like Podcasts and Stories, users can refine their listening skills and progress towards fluency with confidence. Additionally, by incorporating headphones and reviewing exercises regularly, learners can maximize their learning opportunities and enhance comprehension. The flexibility of Duolingo's platform allows users to tailor their learning process to suit their individual needs and preferences, fostering a dynamic and engaging language learning environment. Ultimately, by embracing Duolingo's approach to improving listening skills, learners can embark on a fulfilling language acquisition journey, equipped with the tools and confidence needed to navigate diverse linguistic settings and engage with their world.

2.5 Challenges and Future Directions

2.5.1 Identification and Discussion of Challenges in Using Duolingo for EFL Listening Comprehension

Involving Duolingo for EFL (English as a Foreign Language) listening comprehension presents several challenges that students might experience throughout their language learning journey. These challenges can come from various aspects of the platform, ranging from technological limitations to educational considerations. By exploring these challenges in depth, we can gain a better understanding of how Duolingo can be improved to better serve EFL students' needs. One significant aspect contributing to the limitations of Duolingo for EFL listening comprehension is the lack of authenticity in the audio materials provided. While Duolingo offers an assortment of listening exercises, the recordings frequently highlight clear, articulated speech, which may not precisely mirror the speed, accent variety, and foundation commotion experienced in actual communication circumstances. Research by Smith (2023) highlights the importance of authentic listening materials in language learning, as exposure to natural speech patterns and settings is fundamental for developing listening comprehension skills.

Moreover, the absence of explicit instruction on listening strategies and techniques within Duolingo worsens the challenge for students. Effective listening comprehension involves interpreting audible information as well as employing strategies such as predicting, inferencing, and monitoring comprehension. Without guidance on how to approach listening tasks decisively, students might feel unprepared to navigate the intricacies of real-world listening experiences. Additionally, Duolingo's listening practices often lack variability in accents and dialects, which can present challenges for EFL students who need exposure to a diverse range of English-speaking voices. Research by Li and Wang (2021) underscores the importance of exposure to different accents and dialects in language learning, as it assists students with adjusting to various communication styles and grasp regional variations in pronunciation and intonation.

Another challenge is the absence of feedback and meaningful opportunities for reflection on listening performance within Duolingo. While the platform offers automated scoring and correction for written exercises, it lacks similar mechanisms for assessing listening comprehension skills. Research by Kim and Lee (2020) highlights the significance of timely and informative feedback in language learning. However, Duolingo's current feedback system for listening practices is rudimentary, often limited to simple correctness indicators or generic prompts to try again. Moreover, the pacing and difficulty level of Duolingo's listening activities may not necessarily align with students' proficiency levels and learning preferences, leading to frustration and disengagement. Research by Chen and Zhang (2019) suggests that adaptive learning systems, which adjust content and difficulty based on students' performance and preferences, can improve motivation, engagement, and learning outcomes.

In addition to these pedagogical challenges, there are also technical restrictions and accessibility issues that may hinder EFL students' use of Duolingo for listening comprehension. For example, students with limited internet access or outdated devices

may encounter difficulties streaming audio content or accessing certain features of the platform. To address these challenges effectively, Duolingo could benefit from integrating more authentic listening materials, including natural conversations, interviews, and multimedia content from various English-speaking settings. Moreover, incorporating explicit instruction on listening strategies and providing meaningful feedback on listening performance would empower students to develop effective listening skills that extend beyond the confines of the application. By enhancing its listening comprehension features in these ways, Duolingo can better support EFL students in their language acquisition journey.

2.5.2 Suggestions for Future Research and Development of Effective Mobile Applications for EFL Listening Skills

To enhance the effectiveness of mobile applications for English as a Foreign Language (EFL) listening comprehension, Okumuş Dağdeler (2023) recommends personalized learning pathways tailored to individual learners. These pathways should adapt based on the student's proficiency level, learning pace, and specific areas of focus. By offering relevant and challenging content, personalized learning pathways can improve student engagement and retention. In addition to the proposals outlined by Chuah (2022), which advocate for the integration of real-time interaction features and data-driven learning, further avenues for improving listening comprehension in language learning applications can be explored.

One such avenue involves the incorporation of gratification elements into listening exercises. By introducing elements like rewards, challenges, and progress tracking, language learning applications can enhance user engagement and motivation, thereby encouraging consistent practice and skill development. Additionally, the integration of artificial intelligence (AI) and machine learning algorithms can personalize the learning experience by analyzing user data and providing tailored listening exercises based on individual strengths, weaknesses, and learning preferences. This adaptive approach ensures that students receive content that is relevant to their proficiency level and effectively addresses their specific needs.

Furthermore, the inclusion of interactive storytelling features within language learning applications can captivate students' attention and immerse them in engaging narratives, thereby making the learning experience more enjoyable and effective. These interactive stories can incorporate multimedia elements, quizzes, and interactive opportunities, allowing students to practice listening comprehension in a dynamic and interactive manner. Moreover, collaborative learning opportunities can be facilitated through virtual group activities, language exchange forums, and peer feedback mechanisms. By fostering a sense of community and providing opportunities for students to interact with each other, language learning applications can create a supportive environment where users can practice their listening skills in authentic communicative settings. Finally, ongoing research into educational methodologies and cognitive psychology can inform the development of innovative strategies for improving listening

comprehension in language learning applications. By staying up to date with the latest advancements in educational technology and psychological research, developers can continuously refine their applications to better meet the needs of learners and maximize their learning outcomes.

In conclusion, enhancing the effectiveness of mobile applications for EFL listening comprehension requires a multifaceted approach that includes personalized learning pathways, real-time interaction features, gratification elements, AI integration, interactive storytelling, collaborative learning opportunities, and ongoing research into educational strategies. By tailoring learning pathways to individual learners and providing relevant content, applications can improve engagement and retention. Integration of real-time interaction and gratification elements fosters motivation and consistent practice, while AI personalization ensures content matches learners' proficiency levels and preferences. Interactive storytelling captivates learners and facilitates active learning practice, while collaborative experiences create a supportive environment for authentic communication. Continued research into educational technology and cognitive psychology further informs application development, allowing for ongoing refinement and enhancement of learning outcomes. By embracing these approaches, language learning applications can significantly enhance EFL listening comprehension and provide users with a truly engaging, effective, and personalized learning experience.

3. Research Methodology

3.1 Research Questions

Based on the aforementioned inquiries, the following research questions guided this study:

To investigate the improvement of Duolingo Mobile Applications towards EFL students' listening comprehension performances:

- What is the impact of Duolingo Mobile Applications on improving EFL students' listening comprehension performance?

To examine EFL students' perceptions towards using Duolingo Listening Apps to improve their listening comprehension performances:

- How do EFL students perceive the effectiveness of Duolingo Mobile Applications in enhancing their listening comprehension skills?

3.2 Research Design

The chosen research methodology for this study was survey research, which aligned with the objectives and research questions set forth. The survey research offered a structured approach to gathering data from a large sample size, allowing for the assessment of the impact of Duolingo mobile applications on EFL students' listening comprehension performances and the exploration of students' perceptions of these apps' effectiveness. The decision to utilize survey research is based on its suitability for capturing both

quantitative and qualitative data. Quantitative data collected through comprehensive questionnaires will provide statistical insights into the extent to which Duolingo mobile applications contribute to enhancing listening comprehension performances among EFL students. Likert scale questions will gauge students' perceptions of the effectiveness of Duolingo listening apps, offering numerical data for analysis.

Moreover, the survey research enables the inclusion of open-ended questions in the questionnaires, facilitating qualitative data collection. The interviews for Learners in the present research were adapted from Hernadijaya, N. (2020) interviews. These open-ended questions will allow participants to express their experiences, opinions, and suggestions regarding the effectiveness of Duolingo mobile applications in improving their listening skills and comprehension. The qualitative data obtained from these open-ended responses will provide rich, nuanced insights into students' perceptions and experiences, complementing the quantitative findings.

The survey research methodology was chosen for its efficiency in reaching a large number of participants and its ability to capture both quantitative and qualitative data, which are essential for addressing the research objectives and questions comprehensively. By utilizing this approach, the study aims to provide a holistic understanding of the impact and perceptions of Duolingo mobile applications on EFL students' listening comprehension performances.

3.3 Participants

The research team comprised 39 dedicated third-year students enrolled in the esteemed English Studies Program at School of Foreign Languages, Can Tho University, all of whom have engaged with Duolingo either presently or in the past. Additionally, a subset of 10 students was randomly chosen to participate in in-depth interviews. Each participant has earnestly shared their experiences and perspectives, enriching the study with diverse insights. Their active involvement underscores their commitment to advancing knowledge in language learning methodologies. These students represent a breadth of backgrounds and language proficiency levels, enhancing the depth and relevance of the research findings. Through their contributions, the study aims to offer valuable recommendations for optimizing language learning practices.

3.4 Research Instruments

3.4.1 Questionnaire

The questionnaire utilized in this study was designed to comprehensively assess various aspects of participants' experiences with Duolingo Mobile Applications in improving their English listening comprehension skills. It consisted of several sections aimed at gathering quantitative data on the effectiveness of Duolingo's listening exercises, features, user experience, and engagement, as well as qualitative insights through open-ended questions. The questionnaire began with a straightforward inquiry in Section 2, asking participants whether they use Duolingo mobile applications to enhance their

English listening comprehension skills. This question served as a baseline to ascertain the prevalence of Duolingo usage among the participants.

In Section 3, participants were asked to rate their satisfaction levels with Duolingo's listening exercises and features. Utilizing a Likert scale ranging from "Not at all Satisfied" to "Very Satisfied," participants provided quantitative feedback on the effectiveness of Duolingo's listening exercises and features in improving their listening skills. Furthermore, Section 3 also delved into participants' perceptions of the user experience and engagement provided by Duolingo Mobile Applications. By soliciting ratings and comments on these aspects, the questionnaire aimed to capture participants' overall satisfaction and engagement with the applications.

The final section of the questionnaire, Section 3.4, focused on recommendations and improvement suggestions. Participants were asked to provide feedback on their likelihood of recommending Duolingo to others for improving English listening skills and to suggest ways in which the app could further enhance their listening comprehension abilities.

3.4.2 Interview

The interview component of the study aimed to delve deeper into participants' experiences and perceptions regarding the use of Duolingo Mobile Applications for improving EFL students' listening comprehension performances. Three key interview questions were crafted to elicit qualitative insights from participants:

- 1) How satisfied are you with recommending the Duolingo app to others who are looking to improve their English listening skills? Why or why not?
- 2) How do you believe the Duolingo Mobile app has contributed to improving your listening comprehension as an EFL student?
- 3) How do you think the Duolingo Mobile app can improve your listening comprehension skills as an EFL student?

These interview questions were designed to encourage participants to reflect on their experiences with Duolingo, provide in-depth insights into the perceived benefits and limitations of the app, and offer constructive suggestions for its improvement. Through the integration of both questionnaire and interview methodologies, the study aimed to achieve a comprehensive understanding of the effectiveness and potential enhancements of Duolingo Mobile Applications in improving EFL students' listening comprehension performances.

3.5 Data Collection

3.5.1 Questionnaire

3.5.1.1 Pilot Questionnaire

Prior to the main data collection phase, a pilot study was conducted to assess the suitability of the questionnaire for the students' proficiency level. The questionnaire, initially drafted in English, was translated into Vietnamese by the researcher and subsequently verified by the supervisor for accuracy and clarity. For the pilot study, a

sample of 39 participants was randomly selected from the High-Quality English Studies Program. The researcher visited a classroom to administer the questionnaire pilot. To ensure clarity and understanding of the study's objectives, the entire piloting process, including the objective statement, item descriptions, and explanations, was conducted bilingually. Participants were instructed to complete the questionnaire item by item to ensure thoroughness and to minimize the possibility of overlooking any questions.

This meticulous approach to the pilot study aimed to refine the questionnaire and ensure its appropriateness for the target audience before proceeding with the main data collection phase.

3.5.1.2 Administration

Following the pilot study, revisions were made to shorten the official questionnaire. The revised questionnaire focused on two research objectives: To investigate the improvement of Duolingo Mobile Applications towards EFL students' listening comprehension performances and to examine EFL students' perceptions towards using Duolingo Listening Apps to improve their listening comprehension performances. The questionnaires were distributed during the middle of the second semester of the 2023-academic year at the School of Foreign Languages, Can Tho University. With permission from the School of Foreign Languages, the researcher personally visited each class to request participation, and questionnaires were completed after class. Similar to the pilot study, the researcher provided an explanation of the study's objectives to participants and invited them to complete the bilingual questionnaire. On average, participants took approximately 15 minutes to complete the questionnaire, ensuring thoroughness by reviewing their answers for any omitted items prior to submission. A total of 39 questionnaires were distributed and returned without any missing or incomplete responses.

3.5.2 Interview

3.5.2.1 Pilot Interview

Before proceeding with the interviews involving ten participants, a pilot interview was conducted as a preliminary step to refine the interview questions and enhance the overall quality of the process. The primary objectives of the pilot interview were to assess the interview format, identify any instances of ambiguity or bias present in the questions, and facilitate the researchers' familiarity with the interview procedure. From the pool of respondents who completed the questionnaire, six students were selected to participate in the pilot interview. The clarity and precision of the questions ensured that participants were able to provide substantive and meaningful responses. Furthermore, adjustments and refinements were implemented based on the feedback received from the pilot interviews with the students. This iterative process allowed for the optimization of the interview protocol, thereby enhancing the reliability and validity of the subsequent interviews with the full cohort of participants.

3.5.2.2 Administration

Following the compilation of the questionnaire, each student will provide responses to the interview questions seamlessly integrated beneath the questionnaire. Before amalgamating the responses, the identities of the interviewees were anonymized for confidentiality purposes. Subsequently, prior to the commencement of data analysis, a supervisor meticulously reviewed and documented the gathered data to ascertain its credibility and trustworthiness.

3.6 Data Analysis

3.6.1 Questionnaire

The quantitative data about students' extent of involvement and perceptions obtained from the questionnaire were coded and analyzed using the Statistical Package for Social Sciences (SPSS). The data analysis from questionnaires primarily involved calculations of frequency, mean, median, and mode. Initially, a reliability analysis test was conducted for each cluster of questions and for the entire questionnaire, adhering to the commonly accepted standard that a reliability coefficient above 0.6 indicates an appropriate level of reliability. Subsequently, the frequency procedure was employed to statistically determine the number of students in various cohorts, such as translation courses and those making translation mistakes. Overall, the statistical analysis of the questionnaire data facilitated the identification of patterns, trends, and relationships within the dataset. By leveraging SPSS, a widely used statistical software package, the researcher gained valuable insights into the impact of Duolingo Mobile Applications on EFL students' listening comprehension performances and their perceptions of its effectiveness in enhancing their language skills. This rigorous analysis provided a robust foundation for drawing conclusions and making informed recommendations based on the research findings.

3.6.2 Interview

In parallel, the qualitative data obtained from the interviews provided further insights into EFL students' experiences and perceptions of using Duolingo Mobile Applications to enhance their listening comprehension skills. Participants emphasized the positive impact of Duolingo on their listening abilities, citing the app's engaging listening exercises and user-friendly features as instrumental in their language learning journey. During the interviews, participants expressed overall satisfaction with Duolingo's functionality, design, and motivational aspects. They highlighted the app's gamified features, such as rewards and progress tracking, as key motivators for regular engagement. Moreover, participants appreciated the app's diverse range of listening exercises, tailored to different proficiency levels, which facilitated their continuous improvement in listening comprehension.

4. Findings and Discussion

4.1. Research Findings

The survey assessed the extent to which Duolingo Mobile Applications contribute to the enhancement of listening comprehension performances among EFL students and scrutinized the perceptions of EFL students concerning the efficacy of Duolingo Listening Apps in bolstering their listening comprehension abilities. These responses related to the research objectives were collected and then coded for data analysis. Of these, 24 items were coded for data analysis. The reliability of the questionnaire was evaluated and the results showed that the reliability coefficient of 24 questions of three types of participants was relatively high with $\alpha = .871$.

4.1.1 Frequencies

The result of the questionnaire aims to answer 2 research questions; (1) To what extent do Duolingo Mobile Applications improve EFL students' listening comprehension performances? and (2) What are EFL students' perceptions of the effectiveness of Duolingo Mobile Applications in enhancing their listening comprehension abilities? After collecting the statistics from respondents, the questionnaire checked the reliability to make sure that the data from it was valuable in analyzing. SPSS Scale Test 20.0 was run to test the reliability of the questionnaire. The following tables show the result of the Scale Test.

Table 4.1: Case Processing Summary of the Questionnaire

Case Processing Summary			
		N	%
Cases	Valid	39	100.0
	Excluded	0	.0
	Total	39	100.0

Table 4.1 demonstrated that there were 30 cases of each course in this study. All 30 cases were valid. Moreover, there were no invalid cases. Therefore, the result of this questionnaire was valid.

4.1.2 Reliability

Table 4.2: The Result of the Reliability Statistics of the Questionnaire

Reliability Statistics All	
Cronbach's Alpha	N of Items
.871	24

As illustrated in Table 4.2, there were 75 question items. The results showed that Cronbach's Alpha of the questionnaire was 0.871. Compared with the international standard, this value was higher at 0.700 and lower at 0.950. This made sure that the scale of the questionnaire was good and the questionnaire was reliable. This high level of

reliability ensures that the questionnaire provides consistent and accurate measures of participants' views on the questionnaire's intentions. It also implied that different answers in the questionnaire were reliable indicators. Therefore, this Reliability ensures that the data collected accurately reflects the objectives to be reflected. Moreover, the subsequent results obtained from the questionnaire were reliable.

4.1.3 Descriptive Statistics of the Questionnaire

Table 4.3a: Descriptive Statistics of the Questionnaire

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Questionnaire	39	2.83	4.71	4.316	.323
Valid N (listwise)	39				

From Table 4.3a, the mean score of the questionnaire was 4.316. This means it may be equal to 4.0; therefore, it needs to be checked to ensure accuracy. A hypothesis test used a one-sample *t*-test to compare the average values of the survey with a test value.

Table 4.3b: The Result of One Sample T-test of the Questionnaire

One-Sample Test						
	Test Value = 4					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Questionnaire	6.109	38	.000	.3162	.2114	.421

As demonstrated in Table 4.3b, a One-sample *t*-test was run to check whether the mean (M questionnaire=4.316) was different from the test value 4.0. The result indicated that a significant difference between the mean (M questionnaire=4.316) and the test value 4.0 was observed because the Sig value was 0.000 (Sig <0.05). The level of students' answers was higher than 4.0, signifying a good degree.

Particularly, Table 4.3b shows the result of comparing the mean value of the questions in the questionnaire (M questions=4.316) with the test value 4.0. This *t*-test was intended to check whether there is a significant difference between the sample mean and the test value. The Sig value represents the probability of finding a difference between the means if no actual difference exists in the population. It was clear that the Sig value was less than the statistical significance threshold of 0.05; therefore, we concluded that there was a significant difference. Accordingly, in this case, with a Sig value of 0.000, we were sure to claim that the average mean value of students in this study was at a satisfactory level. This means that learners were satisfied with the benefits of Duolingo Mobile Applications in helping them improve their listening skills.

In summary, the responses from the questionnaire showed that students were satisfied with the impacts of Duolingo Mobile Applications. Moreover, they also had proper awareness of using Duolingo Mobile Applications to practice their listening skills.

In fact, to them, this is not simply a normal English learning app, but it is a useful tool with many features that can help them improve their listening skills.

4.1.4 Students' Perception of the Effectiveness of Duolingo's Listening Exercises

Table 4.4: Students' Perception of the Effectiveness of Duolingo's Listening Exercises

	N	Minimum	Maximum	Mean	Std. Deviation
Question 1	39	2.00	5.00	4.076	.623
Question 2	39	2.00	5.00	4.205	.570
Question 3	39	2.00	5.00	4.153	.586
Question 4	39	2.00	5.00	4.256	.751
Question 5	39	4.00	5.00	4.359	.485
Question 6	39	2.00	5.00	4.333	.737
Question 7	39	2.00	5.00	4.282	.604

Notes:

Question 1: The effectiveness of using mobile applications like Duolingo in enhancing English listening comprehension.

Question 2: The effectiveness of Duolingo's listening exercises in improving language skills.

Question 3: The progression of difficulty in listening exercises on Duolingo as users advance through the lessons.

Question 4: Duolingo's utilization of native speakers in its listening exercises.

Question 5: Duolingo's emphasis on listening comprehension in improving overall language proficiency.

Question 6: How well do Duolingo's listening exercises cater to users with varying levels of language proficiency?

Question 7: The benefits you've noticed in your English language skills after using Duolingo to practice listening comprehension.

As mentioned in Table 4.4, 39 participants answered questions about their perception of the effectiveness of Duolingo's Listening Exercises. The average mean values of the responses varied from 4.0000 to 4.4000. This means that the participants highly agreed with the effectiveness of Duolingo's listening exercises to enhance EFL students' listening comprehension performances.

Particularly, the mean values of Q5 and Q6 were equivalent to 4.3. This shows that students had quite similar opinions on these question items and that they were generally at a satisfactory level. Accordingly, Q5 with a mean score of 4.3590 showed students' satisfaction with the fact that Duolingo Mobile Applications helped them improve overall language proficiency. Students accessing Duolingo Mobile Applications meant they were exposed to diversity in topics, cultures, and listening genres. Therefore, besides listening skills, students could acquire much other general knowledge such as grammar, vocabulary, culture, and intonation... therefore students' overall knowledge of English was improved by practicing listening skills. On the other hand, learners appreciated Duolingo's compatibility with people in different backgrounds of English participants and they rated Q6 at a high level with $M=4.333$ "Duolingo's listening exercises cater to users with varying levels of language proficiency". This means that students with different levels of English knowledge could also participate in practicing listening. These Apps were

built with many different types of exercises at different levels from easy to difficult. Therefore, they could satisfy many different types of users. This shows the diversity of users that the app wanted to reach and this sparked interest among students.

Furthermore, Question 7 which related to *“the benefits in English language skills after using Duolingo to practice listening comprehension”* and Question 2 *“the effectiveness of Duolingo’s listening exercises in improving language skills”* were rated at quite high degrees $M=4.2$. This means that users appreciated the Duolingo Mobile Applications’ effectiveness after using it. Different types of listening exercises had a positive impact on users’ language skills. In particular, they contributed to improving users’ listening comprehension skills. This result had a great contribution from using different sources of materials in listening exercises. Regarding the listening material, native speakers used in the listening lessons was a positive thing because Question 4 *“with Duolingo’s utilization of native speakers in its listening exercises”* was rated at 4.2. Different sources of material from real life used in listening exercises in which the native voice was dominant have contributed to improving users’ language skills, in which listening skills were highly appreciated. Therefore, the voice of a native speaker increases the realism of the listening lesson; thereby it improves the learner’s proficiency in listening skills.

In this area, the interview results showed a similarity. Student 1 agreed that the listening exercises in Duolingo were very useful in practicing listening skills,

“I am very satisfied, the Listening exercises in the Duolingo application are very useful in practicing English skills.”

Meanwhile, Student 3 thinks that besides useful listening exercises, these apps also had other features that attracted users such as interface, entertainment features,

“I think the listening exercises are very useful. when learning languages, in addition, the interface is cute and can be learned while having fun.”

Student 4 was satisfied with the way the listening practice levels were set up from easy to difficult,

“Quite satisfied because the application helps learners practice from the most basic levels, with review mode lessons for learners to remember for a long time”.

In addition to listening exercises, Student 5 said that users were satisfied with additional features such as feedback,

“Satisfied because Duolingo is an easy-to-use application and gives detailed, careful feedback, improving learners’ listening skills.”

On the other hand, Question 3 “the progression of difficulty in listening exercises on Duolingo as users advance through the lessons” received a rating of 4.153. This index shows that the application of levels of difficulty as the learners’ progression was satisfied. In other words, the difficult levels applied in the listening lesson were appropriate to the learner's progression. Finally, Question 1 “the effectiveness of using mobile applications like Duolingo in enhancing English listening comprehension” got the lowest rating with a mean score of $M=4.076$. This index was the lowest one among the impact indicators of Duolingo Mobile Applications, however, it was still at a satisfactory level. This means that students had an awareness of the impact of Duolingo Mobile Applications on enhancing EFL students’ listening comprehension performances. And this impact was very positive and other impact factors have been well received by students. Therefore, Duolingo Mobile Applications should be applied to students' listening practice.

4.1.5 Students’ Perceptions of Duolingo's Listening Features

Table 4.5: Students’ Perception of Duolingo's Listening Features

	N	Minimum	Maximum	Mean	Std. Deviation
Question 8	39	2.00	5.00	4.1282	.69508
Question 9	39	4.00	5.00	4.3333	.47757
Question 10	39	2.00	5.00	4.2821	.75911
Question 11	39	2.00	5.00	4.4359	.75376
Question 12	39	2.00	5.00	4.3590	.66835
Question 13	39	2.00	5.00	4.4615	.75555
Question 14	39	2.00	5.00	4.3333	.62126

Notes:

Question 8: How does Duolingo's podcasts feature help users practice their listening comprehension skills?

Question 9: The incorporation of real-life stories in the target language for listening practice on Duolingo.

Question 10: The variety of listening materials available on Duolingo for practicing English comprehension.

Question 11: The feature allows you to replay audio clips during Duolingo exercises for English listening.

Question 12: The incorporation of vocabulary and grammar exercises alongside listening tasks to enhance English comprehension on Duolingo.

Question 13: The variety of topics covered in Duolingo's listening exercises for improving English comprehension.

Question 14: The progress tracking and performance analysis tools provided by Duolingo to monitor your English listening and comprehension skills.

As mentioned in Table 4.5, 39 participants answered questions about their perception of Duolingo's listening features. The average mean values of the responses varied from 4.1000 to 4.4000. This means that the participants highly agreed with Duolingo's listening features in enhancing EFL students’ listening comprehension performances.

Particularly, most participants agreed with the content in Q11 “the feature allowing you to replay audio clips during Duolingo exercises for English listening” with $MQ11= 4.435$. This means that participants highly rated the function of doing English listening exercises by replaying audio clips covering a variety of topics in Duolingo Mobile Applications. In other words, learners can repeat the audio clips when doing English listening exercises.

This becomes especially useful for learners with weak listening skills because it helps them practice many times without spending a lot of time searching for other listening materials. Furthermore, there is a fact that the repeated audio clips help learners listen to them again at different times. Thus, learners can practice continuously. Similarly, Q13 *"the variety of topics covered in Duolingo's listening exercises for improving English comprehension"* got the high mean value with $MQ_{13} = 4.461$. It can be explained that learners are interested in practicing listening skills with different topics. This is very important because many different types of topics will give learners a new and attractive feeling. Learners do not feel bored and they will continue to use these apps to practice listening skills. Besides, a variety of topics also helps learners improve their vocabulary. Then, they can listen to more difficult levels.

Similarly, Q9 *"the incorporation of real-life stories in the target language for listening practices on Duolingo"* and Q12 *"the incorporation of vocabulary and grammar exercises alongside listening tasks to enhance English comprehension on Duolingo"* received a positive rating with a mean score value 4.3. Both of these questions demonstrated the connection of many factors together in one listening exercise. And the Duolingo Mobile Applications have done this very well and therefore these apps have caused excitement among users. Real social stories were included in the listening lessons to help users have the opportunity to approach different situations. Therefore, they were often not caught unawares in using English to communicate with others in real life. In addition, including grammar points and vocabulary in the listening exercises helped students learn quickly and deeply understand what they were learning.

And as a result, they can use it properly. It is sure to claim that incorporating real story elements, grammar explanations and vocabulary in one listening lesson is a good idea. What's more, the Q14 *"the progress tracking and performance analysis tools provided by Duolingo to monitor your English listening and comprehension skills"* was highly appreciated by users with a mean score of 4.3. In other words, these Apps not only provided users with practice exercises, but also they used tools to measure learners' progress of learning English listening skills. This shows that the features of these apps have reached optimization when helping learners monitor their learning process and evaluate that process. When the learner participated in listening exercises, they were recorded by the registration system and then they observed the change in listening ability through the score achieved. In this survey, participants had a positive attitude toward the performance analysis tools when choosing them as satisfied. Evaluation helped learners recognize their learning process, strengths and limitations, and then self-adjust. Thus, the learner's autonomy was demonstrated.

Regarding Duolingo's listening features, the conclusions from the interviews further strengthen the above results. Student 1 assessed that listening features had a positive impact on their vocabulary and pronunciation skills,

"Duolingo increased vocabulary, practiced pronunciation, learned sentence patterns, contributed a big part to becoming familiar with the language rhythm and pronunciation."

Student 3 mentioned the level of listening practice,

"You can practice every day thanks to the app's reminder notifications. Practicing on the app helps increase your listening performance significantly."

Student 4 agreed that his English-speaking intonation improved after being exposed to different intonations in listening,

"Using Duolingo has partly contributed to the process of cultivating and improving my listening comprehension as well as helping me get used to many different accents."

While Student 10 mentioned Duolingo as a method that has helped them shape their listening ability from the first days.

In addition, the results showed that students rated "satisfied" for question item 10 which related to *"the variety of listening materials available on Duolingo for practicing English comprehension"* with $M=4.2821$. It is clear that a rich source of materials brought many benefits for users. They practiced with many different accents and then they could distinguish regional differences. These helped users improve their understanding of the ability to recognize speech. On the other hand, regarding the feature of reading voice in Question 8 *"Duolingo's podcasts feature helps users practice their listening comprehension skills"*, users rated it high degree with a mean score of 4.128. This showed that users were satisfied with reading voice. However, this index was lower than that of the native speaker. In other words, users had a choice of factors that were powerful in helping them develop their listening skills. Therefore, Duolingo's podcasts feature did not receive much interest from users. In short, the listening features of Duolingo Mobile Applications had a direct impact on students' performance and quality of learning process in learning listening skills.

4.1.6 Students' Perception of Users' Experience and Engagement

Table 4.6: Students' Perception of User Experience and Engagement

	N	Minimum	Maximum	Mean	Std. Deviation
Question 15	39	4.00	5.00	4.282	.4558
Question 16	39	2.00	5.00	4.179	.7208
Question 17	39	2.00	5.00	4.384	.6331
Question 18	39	2.00	5.00	4.435	.6405
Question 19	39	2.00	5.00	4.410	.7510
Question 20	39	2.00	5.00	4.435	.6405
Question 21	39	2.00	5.00	4.435	.6405

Notes:

Question 15: The value of completing listening comprehension exercises on Duolingo for language learners.
 Question 16: The frequency of engaging in listening exercises on Duolingo to enhance your English listening skills.

Question 17: The frequency of new listening materials being added to Duolingo for English comprehension practice.

Question 18: The interface of the Duolingo app for accessing listening exercises.

Question 19: The clarity of instructions provided in Duolingo's listening exercises for English comprehension.

Question 20: The overall enjoyment you experience while engaging with Duolingo's listening exercises for English learning.

Question 21: The feedback provided by Duolingo during or after completing listening exercises for English comprehension.

As mentioned in Table 4.6, 39 participants answered questions about their perception of Duolingo's listening features. The average mean values of the responses varied from 4.1000 to 4.5000. This means that the participants highly agreed with the users' experience and engagement in enhancing EFL students' listening comprehension performances.

In detail, first, question items 18, 19, 20, and 21 got the high average mean score with $M > 4.4000$. This means that most students agreed with the contents of the above question items. Accordingly, users appreciated the interface of the Duolingo Mobile Applications for accessing listening exercises. It could be affirmed that this was one of the first factors that directly affected the decision to continue using these apps. Because the beautiful design creates excitement for users. The clarity of instructions provided in Duolingo's listening exercises for English comprehension was also a highly appreciated factor. The fact that clear instructions will help users avoid misunderstandings and clearly know what they need to do. Therefore, users will operate more easily. Moreover, the feedback provided by Duolingo during or after completing listening exercises for English comprehension brought users positive benefits. Because users can realize the results they achieve after each listening lesson. Then, students can closely monitor their learning process, they can adjust their learning style to get better results.

Next, Q17 was rated at 4.3000. This index was slightly lower than the leading group. This shows that students were satisfied with the frequency of new listening materials being added to Duolingo for English comprehension practice. The timely and continuous addition of new listening materials helps learners keep up with new trends. At the same time, it also enriches the listening material library. Learners can practice more, thereby improving their listening ability. Additionally, students rated question item 15 at a high level with a mean score of $M = 4.282$. This shows that learners viewed completing listening comprehension exercises on Duolingo as a positive thing. In other words, learners could practice listening at the maximum level and experience all the features included in a listening exercise. After finishing the listening lesson, learners could gain experience from which they could improve for the next time. Finally, the last position in Table 4.6 was question item 16 with the mean score of $M = 4.179$. This index was the lowest once in the table but it was still at a high degree level. Therefore, that was a criterion to confirm that students rated the frequency of engaging in listening exercises on Duolingo to enhance their English listening skills at a positive level. This means that students agreed that students must regularly participate in listening lessons and this

must happen continuously. It is clear that this helped learners maintain the level of proficiency they have achieved. Then, students could improve their listening skills.

Furthermore, Student 6 thought that the learning environment on apps was an interesting experience,

"The app helps create an interesting daily practice environment, helping me improve my listening comprehension."

Student 7 affirmed that these were interesting experiences thereby they promoted daily participation and helped them not get bored,

"The application helps me improve quite well, I often use it to play and study at the same time, it's interesting and not boring."

While Student 8 mentioned daily participation as a useful way to help them improve their speaking skills,

"Duolingo helped me improve my listening comprehension skills throughout the process from basic to being able to listen to foreign teachers through participating in daily practice."

Student 9 affirmed that these apps helped improve listening skills a lot,

"Duolingo Improves listening skills a lot because nowadays people like to use their phones so participating in apps for studying becomes easier. The application has the function of listening over and over again and has an easy-to-understand translation."

In short, learners valued users' experience and engagement at a satisfactory level in influencing their listening skills. Accordingly, elements of apps such as interface, instructions and feedback have made users excited, and learners had overall enjoyment to continue participating in apps.

4.1.7 Students' Perceptions of Recommendations and Improvement

Table 4.7: EFL Students' Perceptions of Recommendations and Improvement

	N	Minimum	Maximum	Mean	Std. Deviation
Question 22	39	2.00	5.00	4.256	.5946
Question 23	39	2.00	5.00	4.359	.6277
Question 24	39	4.00	5.00	4.410	.4983

Notes:

Question 22: The Duolingo app could be improved to better enhance English listening comprehension for EFL learners.

Question 23: The effectiveness of Duolingo's updates and enhancements in addressing identified areas for improvement in English listening and comprehension.

Question 24: The timeliness of updates and enhancements made by Duolingo to address evolving needs in English listening and comprehension learning.

Table 4.7 illustrates that 39 participants answered questions about recommendations and improvement. The average mean values of the responses varied from 4.2000 to 4.5000. This means that the participants highly agreed with the recommendations and improvements to enhance EFL students' performances of listening comprehension. In detail, first, question item 24 got the high average mean score with $M > 4.4000$. This means that most students agreed with the contents of the above question items. Accordingly, the timeliness of updates and enhancements made by Duolingo to address evolving needs was also positively evaluated. Those updates brought newer experiences and kept up with trends. Learners keep up with the general development of society. Duolingo Mobile Applications' updates created excitement for users. From the above factors, learners agreed that experience while engaging with Duolingo's listening exercises for English learning brought overall enjoyment. In other words, learners enjoyed learning with these apps because of the enjoyment it has brought. Learners not only learn knowledge through listening lessons but also experience new technology.

Next, question items 23 were rated at 4.3000. This shows that students were satisfied with the effectiveness of Duolingo's updates and enhancements in addressing identified areas for improvement in English listening and comprehension. This ensures that updates and improvements have promptly met user needs. The update also brought new things such as adding listening resources, interface, app performance, and audio file quality... This helped users experience many new utilities. Besides, the continuous updating of new listening materials was evaluated very positively by students. Indeed, listening materials directly affected the quality of listening, which in turn affected the users' learning results. This means that users took care a lot about the quality of listening exercises on apps. Finally, students evaluated question item 22 with a mean score of $M = 4.256$. This means students agreed that the Duolingo Mobile Applications could be improved to better enhance English listening comprehension for EFL learners. These apps gave learners many opportunities to practice listening skills with modern technology. In addition, learners could also interact with native speakers' voices. Therefore, it is understandable that learners appreciated the effectiveness of these apps at a high level.

Regarding standard deviation (SD) values, they measured the spread of a set of observations. The larger the standard deviation was, the more spread out the observations were. As mentioned in Table 4.4, Table 4.5, Table 4.6 and Table 4.7, all standard deviations were less than 1.0 ($S.D < 1.0$). This could be confirmed that the average value fluctuated slightly and the differences in participants' answers were small. In other words, participants had nearly identical views about the impacts of Duolingo Mobile Applications on enhancing EFL students' listening comprehension performances.

In conclusion, Duolingo Mobile Applications had a strong impact on students' listening ability and improved it for the better. Elements in Duolingo Mobile Applications made an important contribution to improving EFL students' performances of listening

comprehension. Participants also received these apps with a positive attitude, so teachers might think of using these apps as a type of homework or listening exercise.

4.2 Discussion

4.2.1 Students' Perception of the Effectiveness of Duolingo's Listening Exercises

The results collected from the questionnaire showed that EFL students have appreciated the impact of Duolingo's listening exercises on their listening skills. In the educational environment in Vietnam where most students learn in Asian styles, Duolingo Mobile Applications also has a positive impact on learners. This means that the application of these apps is widespread and does not depend on the learner's circumstances. This result is also similar to other studies such as Dastrup (2023) and Blanco (2022). Students in Vietnam also agreed that listening exercises that integrated podcast-style audio narratives infused with captivating storytelling, skillfully crafted by Duolingo's vibrant characters could improve learners' listening ability. These listening exercises were carefully built to gradually increase the difficulty of the listening lessons, and the content of different lessons was also accurately integrated in real time to help learners strengthen their ability to grasp vocabulary phrases and linguistic concepts in different contexts.

In the educational context in Vietnam, the effects of listening lessons on apps are very positive for learners. This was similar to the research results of Islam (2020). Obviously, high school students in Vietnam where they studied with the integration of mobile devices in teaching and learning have very positively received this trend. This means that they recognized the development of skills after applying these apps. Study results showed that learners significantly improved their listening comprehension scores between pre- and post-registration use. In other words, MALL (mobile-assisted language learning) could effectively improve EFL students' listening skills.

4.2.2 Students' Perceptions of Duolingo's Listening Features

The characteristics of the listening features are one of the most important factors that made Duolingo Mobile Applications more attractive. The majority of participants in this study highly valued the listening features and appreciated their influence on learners' listening comprehension ability. The results in this study are similar to those in Jiang's (2022) study. Accordingly, users are transformed into real-life situations or real stories in society, such as situations in the office, traveling, shopping, and daily situations. The listening lessons can be repeated many times and the topics are used from many different situations in life. These helped learners feel more interested and exposed to rich listening resources. Thus, as McDonald (2024) and Johnson (2024) asserted, these characteristics helped learners develop other elements such as vocabulary, grammar, and intonation, then, learners' listening skills were developed comprehensively.

The results from this questionnaire strongly supported the research results of Peláez-Sánchez (2023). Accordingly, features of listening lessons such as podcasts, real-life stories, listening materials and a variety of topics have improved learners' vocabulary and grammar abilities. In the context of Duolingo apps, students' vocabulary mastery and

motivation to learn were improved. Duolingo apps were not only a language acquisition platform but also enhanced students' listening comprehension (Dastrup, 2023 and Blanco, 2022).

4.2.3 Students' Perceptions of Users' Experience and Engagement

Learners' regular participation in listening exercises plays an important role in improving listening skills. Through regular access, learners gradually become familiar with the structure of listening exercises. As users complete a listening level, they will encounter audio exercises of increasing difficulty. This allows them to enhance their ability to understand spoken language with increasing accuracy (Blanco, 2022; Gibson, 2022). Learners' completion of daily listening exercises allows them to not only expand their vocabulary and grasp of grammar but also improve their ability to understand and interact with spoken language in authentic settings. This means that students deeply understand conversation skills through listening exercises and then they can adjust their listening ability by themselves. Accordingly, Duolingo apps influenced language learning habits, especially listening skills, and then transformed them in favor of learners by applying new learning trends. In addition, Duolingo apps have created excitement for users and thus Duolingo maintained learners' engagement. This means that Duolingo apps promoted accessibility and provided more enjoyable learning experiences for users.

4.2.4 Students' Perceptions of Recommendations and Improvement

Results from the questionnaire showed that participants in this study strongly agreed that apps needed to improve. First, regarding recommendations, Duolingo's listening practices were considered to be limited in terms of accent and dialect diversity. This needs to be overcome because exposure to a variety of English accents will help students adjust to different communication styles and grasp regional variations in pronunciation and intonation (Li and Wang, 2021).

Next, the results of this study are similar to Smith's (2023) study. This means that the limitations of English learning apps do not depend on the learner's regional situation. Accordingly, Smith (2023) affirmed that learning to listen through listening exercises on these apps helped develop listening comprehension skills. However, audio recordings in current apps, while highlighting clear speech, do not accurately reflect the speed, tone variety, and underlying emotions experienced in real communication situations. Moreover, the effectiveness of Duolingo's timelines of updates and enhancements made by Duolingo to address evolving learners' needs needs to be improved. Duolingo's current feedback systems are still rudimentary and limited to simple accuracy indicators or generic prompts to try again. This result disagreed with the study of Kim and Lee (2020) which confirmed that timely feedback with sufficient information would strongly affect the user's language learning ability. From the results of this study, it can be confirmed that Duolingo Mobile apps improve users' listening skills. It helps users improve their vocabulary and grammar skills, exposes them to rich listening materials, and has a positive impact on learners' motivation...On the other hand, Duolingo Mobile

Apps also need to make improvements to become more perfect. Improvements should be made in updating new trends to address existing limitations.

5. Conclusion and Implications

5.1 Conclusion

In conclusion, the research conducted has shed valuable light on the efficacy of Duolingo's listening exercises in bolstering the listening comprehension skills of English as a Foreign Language (EFL) students, particularly in the context of Vietnam. The study unveils a positive perception among EFL students regarding Duolingo's listening exercises, emphasizing their significant impact on improving listening abilities. Notably, the integration of podcast-style audio narratives and real-life scenarios within Duolingo's exercises has garnered praise for its ability to provide immersive and engaging learning experiences. Moreover, the structured progression of difficulty levels in these exercises has proven instrumental in facilitating gradual improvement in listening comprehension skills.

Furthermore, students have expressed high satisfaction with Duolingo's listening features, including podcasts, real-life stories, and a diverse array of listening materials. These features have not only contributed to vocabulary and grammar development but have also bolstered overall motivation and engagement with the language learning process. However, areas for enhancement have been identified, particularly the need for greater diversity in accents and dialects represented in the exercises, as well as improvements to the feedback system to offer more comprehensive guidance.

In summary, while Duolingo's listening exercises have demonstrated positive effects on EFL students' listening skills, there exists ample opportunity for refinement and improvement to better cater to the diverse needs of learners.

5.2 Pedagogical Implications

The pedagogical implications drawn from the literature review underscore the significance of integrating Duolingo Mobile Applications into language learning curricula to enhance EFL students' listening comprehension skills. Educators can leverage these applications to incorporate authentic listening materials and provide explicit instruction on listening strategies, thereby fostering a more immersive and engaging learning environment. Moreover, the review highlights the potential benefits of personalized learning pathways, real-time interaction features, and gratification elements in boosting user engagement and motivation. These insights inform the development of effective language learning practices tailored to the diverse needs and preferences of EFL students.

5.3 Limitations

Despite its contributions, the literature review is not without its limitations. Primarily, the focus on the efficacy of Duolingo Mobile Applications for EFL listening

comprehension restricts the generalizability of the findings to other language learning contexts. Additionally, the reliance on existing research studies, which may vary in quality and methodology, poses a challenge. Future research endeavors should aim to address these limitations through longitudinal studies with larger and more diverse samples, employing mixed-method approaches, and exploring alternative language learning platforms.

5.4 Recommendations for Further Research

Based on the findings of this study, the following recommendations are proposed to enhance the effectiveness of Duolingo's listening exercises and features:

First, *incorporating greater accent and dialect diversity*: Duolingo should diversify the accents and dialects represented in its listening exercises to better mirror real-world communication scenarios, aiding learners in adjusting to different communication styles and understanding regional variations in pronunciation and intonation.

Second, *enhancing feedback mechanisms*: Improving Duolingo's feedback system for listening exercises is essential to offer more detailed and informative guidance to learners, supporting their language learning progress effectively.

Third, *regular updating and enhancements*: Prioritizing regular updates and enhancements to its listening exercises and features enables Duolingo to address evolving learner needs and preferences promptly, ensuring content remains relevant and engaging.

Fourth, *personalized learning pathways*: Implementation of personalized learning pathways tailored to individual learners' proficiency levels and specific areas of focus can significantly enhance engagement and retention.

Fifth, *collaborative learning opportunities*: Integrating collaborative learning opportunities fosters peer interaction and mutual support, enhancing the overall learning experience for EFL students.

Sixth, *interactive storytelling features*: Incorporating interactive storytelling features can make listening practice more enjoyable and effective by immersing learners in dynamic narratives.

Seventh, *integration of Artificial Intelligence*: Leveraging AI and machine learning algorithms ensures that learners receive content tailored to their proficiency levels and effectively addresses their specific needs.

By implementing these recommendations, Duolingo can further improve its listening exercises and features, thereby enhancing the language learning experience for EFL students and fostering greater proficiency in listening comprehension skills.

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Conflict of Interest Statement

The author declares no conflicts of interest.

About the Authors

Miss Nguyen Khanh Tuong is currently a senior in the English Studies Program, School of Foreign Languages, Can Tho University (CTU), Vietnam, and will graduate from CTU in September 2024. She is interested in doing research about learning and teaching English at any level, IT in learning and teaching English, Intercultural Communication (ICC). She can be reached at tuongb2014279@student.ctu.edu.vn.

Mr. Thai Cong Dan, is currently a senior lecturer of English, School of Foreign Languages, Can Tho University (CTU), Vietnam, -cum-a project manager. He has held his PhD at Naresuan University, Thailand since 2010 in Educational Administration (English program). He got his MA in Cultural aspects and Literature from University of Notre Dame du Lac, Indiana, USA in 1999. His main research interests are TEF/TESOL issues, intercultural communication, high school and higher education levels in English learning and teaching, English program management, curriculum design, testing and evaluation, ESP for Tourism, Political Education, Food Technology, professional development and educational administration. He can be reached at tcdan@ctu.edu.vn.

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