The Future of Interactive Listening and the Effectiveness of Emerging Technologies: Duolingo Application in Focus

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Abstract— As technology continues to shape the landscape of language learning, language applications, namely Duolingo, stand out as an effective tool in facilitating language learning. Duolingo is a well-established language learning platform, highly regarded for its accessibility and engaging design, offering users an adaptive, gamified experience. This paper explores the efficacy of Duolingo with a particular emphasis on the hands on interactive listening activities. As a platform known for its distinctive approach, Duolingo offers a robust tool for enhancing learners' listening comprehension, thus contributing to overall language learning. To this end, the research is grounded in a case study conducted within the Moroccan context, specifically in the Marrakech-Safi region, with the purpose of evaluating the effectiveness of interactive listening activities for English language learning. The case study focuses on Moroccan participants actively using the application, illustrating how such engagement influences both English listening proficiency and broader language learning outcomes. By adopting a mixed-methods approach, this study highlights the potential of interactive listening tools to improve English language proficiency among learners in Morocco. Drawing upon a mixed-method approach, this study discerns the strengths and limitations inherent in Duolingo's approach to foster listening skills among Moroccan learners. Furthermore, the investigation extends beyond mere evaluation, delving into the broader ramifications of integrating Duolingo into language education environments. Through this inquiry, the study seeks to shed light on Duolingo's potential in fostering learner autonomy and addressing the dynamic needs of language learners. Ultimately, this study contributes valuable insights to the scholarly discourse surrounding technology-mediated language learning and pedagogical strategies in the digital age.

Keywords— Digital platforms, Duolingo, Interactive listening, Language learning, Moroccan education, Technology-mediated learning

I. INTRODUCTION

Mobile-assisted language learning (MALL) has gained increasing prominence in recent years, primarily due to the widespread accessibility of smartphones and tablets. These mobile devices have transformed the process of language acquisition by offering learners constant access to educational resources, allowing for more flexible and ubiquitous engagement with the target language. This constant exposure, facilitated by mobile technology, is critical for achieving successful language acquisition, as frequent interaction with the language has been shown to enhance retention and proficiency. Furthermore, many mobile language learning applications employ gamification strategies, which introduce elements of challenge and reward into the learning process. These features not only make the learning experience more interactive and enjoyable but also contribute to sustained learner motivation and engagement, which are key factors in ensuring long-term progress in language learning.

Duolingo serves as a leading language learning platform that offers free online courses, with optional paid subscriptions, available via both web and mobile applications. According to M Science (2023, p. 5), Duolingo dominates the commercial app-based language

learning market, accounting for approximately 90% of global active users. By providing free, accessible content, Duolingo helps bridge educational disparities, making high-quality language learning available to a broad audience. Amid its notable features, the interactive listening exercises have gained particular interest due to their effectiveness in enhancing real-time language processing and communicative competence. In a study by Jiang et al. (2021), conducted with Duolingo researchers, learners completing A2-level Spanish and French courses (based on CEFR) showed an Intermediate Low level in reading and Novice High in listening. These results indicate Duolingo's effectiveness in building foundational reading and listening skills among beginners.

Among the studies investigating the effectiveness of mobile-assisted language learning (MALL), English continues to be the predominant target language (Burston & Giannakou, 2022). The global rise in demand for English proficiency, fuelled by its status as the lingua franca in international communication, business, and academia, has sparked the development of innovative pedagogical methods such as online platforms and immersive learning programs. This trend is also evident in the Moroccan context, where English proficiency is increasingly sought after in both educational and professional settings. As the need for English proficiency has intensified, particularly among young learners, there has been an increased adoption of modern language learning tools like Duolingo and other mobile-based platforms to meet this demand. However, questions remain regarding the overall effectiveness of Duolingo in terms of measurable language gains. Therefore, this study aims to delve into the pedagogical efficacy of Duolingo's interactive listening features, assessing their impact on learners' listening skills and overall proficiency within the Moroccan informal educational contexts. In doing so, this study aims to contribute to the broader academic discourse on integrating technology in language learning, due to the increasing role of digital tools in modern education and its adaptive features to diverse educational environments.

II.   THEORETICAL FRAMEWORK

In Vygotsky's (1978) sociocultural theory, language learning is a socially mediated process where interaction with more knowledgeable others plays a key role in cognitive development. In the context of interactive listening, Goh and Taib (2006) suggest that engaging learners in real-time communicative scenarios, such as dialogues with native speakers, fosters active listening and comprehension skills. Furthermore, Richards and Rodgers (2014) argue that the communicative language teaching

(CLT) approach emphasizes the importance of meaningful communication, which aligns with the use of interactive listening tasks to develop practical language skills in authentic contexts.

Additionally, technological advancements have significantly enhanced the potential of interactive listening in language education. Thorne and Reinhardt (2008) highlight how modern technologies offer learners innovative methods to immerse themselves in dynamic spoken language environments. Nunan (2019) further emphasizes that tools like virtual reality and adaptive platforms provide realistic communication scenarios that improve both linguistic and cultural competence. In line with these advancements, Loewen et al. (2019) note that gamified applications, such as Duolingo, leverage interactive listening exercises to engage and motivate learners, which supports Deci and Ryan's (1985) self-determination theory. This theory posits that learners perform better when they experience autonomy, competence, and engagement—factors that are effectively supported by technology-enhanced, personalized learning experiences. Thus, these theories collectively reinforce the value of interactive listening as a crucial component in modern language learning.

2.1 Integration of Technology in Language Education

The integration of technology into language education signifies a profound shift in pedagogical practices, introducing a multitude of opportunities for both learners and educators. According to Kukulska-Hulme and Shield (2008), this transformation is largely driven by the widespread accessibility of digital devices and the abundance of online resources, which have democratized language learning by removing traditional barriers related to time and geographical location. Brown (2016) highlights that a key element of this shift is the ability of technology to facilitate personalized learning experiences, which are tailored to the specific needs and preferences of individual learners. Through the use of adaptive learning algorithms and data analytics, language learning platforms can assess learner performance and provide targeted interventions, thereby optimizing learning outcomes. This personalized approach not only allows learners to advance at their own pace but also offers immediate feedback and focuses on areas of difficulty, which enhances both learning efficiency and overall effectiveness.

Furthermore, the integration of technology into language education facilitates immersive and interactive learning experiences that extend beyond the boundaries of traditional classrooms. Blyth (2019) emphasizes that virtual reality (VR) technology offers learners the opportunity to

engage in simulated environments, providing a realistic platform for language practice and cultural immersion. This exposure to authentic language use in context enhances both linguistic competence and cultural understanding by allowing learners to experience and interpret cultural nuances and sociolinguistic conventions. Similarly, Sykes and Reinhardt (2013) highlight that language learning applications and games, through the use of gamification techniques, actively engage learners in interactive tasks. These gamified experiences not only motivate learners to persist in their language studies but also promote higher levels of intrinsic motivation, leading to sustained long-term engagement and improved language acquisition outcomes. Through these technological tools, learners can interact with language in a dynamic and meaningful way, further enriching the language learning process.

Moreover, technology enhances collaboration and communication among learners, as well as with native speakers of the target language, fostering both linguistic authenticity and a sense of community. According to Thorne (2010), online language exchange platforms facilitate global connections between learners, offering valuable opportunities for authentic language practice and cultural exchange. Lamy and Zourou (2013) further highlight the role of social media and online forums as virtual communities, where learners can interact with peers, share resources, and engage in collaborative learning activities. These digital platforms enable learners to develop communicative competence and intercultural understanding within real-world contexts, effectively transcending the constraints of traditional language learning environments.

Therefore, through such technological tools, learners are not only exposed to authentic language use but are also immersed in cultural exchanges that enhance their overall language learning experience. Ultimately, the integration of technology into language education heralds a transformative era characterized by personalized learning, immersive experiences, and collaborative interactions. By harnessing the affordances of technology, educators can create dynamic and engaging learning environments that empower learners to achieve their language learning goals effectively and autonomously.

2.2 Current Trends in Language Learning Pedagogy Emphasizing Interactivity

In contemporary language education, the pivotal role of interactivity in fostering effective instructional methodologies is increasingly acknowledged. According to Richards and Rodgers (2014), this shift is grounded in the communicative language teaching (CLT) paradigm, which emphasizes the central role of meaningful communication and interaction in language acquisition. As a result,

educators are progressively incorporating pedagogical approaches that harness interactivity to cultivate dynamic and engaging learning environments. This focus on interaction not only enhances the communicative competence of learners but also aligns with modern educational objectives that prioritize active participation and authentic language use.

A prominent trend in language education is the increasing adoption of task-based language teaching (TBLT), which prioritizes the use of authentic, real-world tasks to promote language acquisition. As Ellis (2003) explains, TBLT engages learners in tasks that require communication and interaction in the target language, thereby fostering meaningful language use and developing communicative competence. Similarly, collaborative learning approaches, such as pair and group work, offer learners opportunities to engage in peer-to-peer interaction, negotiate meaning, and collaborate on problem-solving tasks. According to Johnson and Johnson (2009), these activities not only enhance linguistic proficiency but also support the development of interpersonal communication and intercultural understanding.

On top of that, the integration of technology into language education has opened new pathways for interactive learning experiences. Levy and Stockwell (2006) note that computer-assisted language learning (CALL), virtual classrooms, and online language exchanges provide immersive, interactive environments where learners can practice language skills. By utilizing the potential of digital technologies, educators can design learning environments that accommodate diverse learning styles and preferences, thus enhancing both learner engagement and motivation. This confluence of interactive pedagogies and technological tools represents a significant advancement in contemporary language education.

2.3 Importance of Interactive Listening Activities in Language Learning

In recent years, the emphasis on interactive methodologies in language learning has grown significantly, aligning with the broader shift towards communicative and task-based approaches. Scholars argue that meaningful interaction is crucial for developing communicative competence, as it encourages active language use and real-time processing (Ellis, 2003; Richards & Rodgers, 2014). In particular, listening—often regarded as a passive skill—has been reconceptualized as an interactive process that plays a vital role in language acquisition. According to Rost (2011), listening is not merely a receptive skill but involves active engagement, where learners process linguistic input, infer meaning, and prepare for appropriate responses.

This shift has brought interactive listening activities to the forefront of language pedagogy, as they not only improve listening comprehension but also enhance learners' ability to participate in authentic, dynamic communication. As Richards and Schmidt (2013) note, these activities help learners acquire the necessary skills and strategies to navigate various listening situations, from casual conversations to formal presentations. Goh and Taib (2006) emphasize that interactive listening tasks enable learners to adapt to different communicative environments, enhancing their ability to respond effectively. Additionally, Field (2008) highlights that such activities foster intercultural awareness, as learners are exposed to a range of accents, speech patterns, and cultural norms. This exposure enables learners to engage successfully with speakers from diverse linguistic and cultural backgrounds, thus improving their communicative effectiveness in multicultural settings (Richards & Schmidt, 2013).

Moreover, interactive listening activities foster learner autonomy by allowing engagement with authentic audio materials like podcasts and dialogues. Vandergrift and Goh (2012) assert that these activities empower learners to select materials aligned with their interests, promoting personalized learning. Richards and Rodgers (2014) highlight that this tailored approach boosts motivation and engagement. Additionally, Graham (2006) notes that such activities enhance metacognitive awareness, prompting learners to reflect on their strategies and make improvements. This self-assessment leads to a deeper understanding of their strengths and weaknesses, ultimately improving language learning outcomes (Vandergrift & Goh, 2012).

2.4 Emerging Technologies and Trends in Interactive Listening

According to Nunan (2019), advancements in digital platforms and communication tools are reshaping interactive listening, offering learners more dynamic and immersive experiences. Technologies such as artificial intelligence-driven language tutoring systems and virtual reality-enhanced listening environments provide innovative approaches for language learners, expanding how they interact with authentic spoken language. As Thorne and Reinhardt (2008) suggest, these technological advancements present significant opportunities but also pose challenges for both educators and learners, who must navigate the complexities of integrating these tools into language learning contexts.

In light of these developments, research has increasingly focused on understanding the pedagogical implications of incorporating emerging technologies into interactive listening activities. Warschauer and Healey (1998) emphasize the importance of investigating the effectiveness and best practices for integrating such experiences into language curricula. Similarly, Stockwell (2007) highlights the need for educators to make informed pedagogical decisions that leverage these technologies to maximize language learning outcomes. As technology continues to shape the future of language education, it is essential for educators to critically engage with these trends and ensure that interactive listening practices are thoughtfully aligned with educational goals, thereby enhancing the overall efficacy of language instruction.

2.5 The Duolingo Application: Features and Functionality

Duolingo, a prominent platform for language learning, has earned widespread acclaim for its innovative approach to language education. Renowned for its accessibility and effectiveness, the platform provides a free, user-friendly application that allows learners to access a wide range of language courses. With its flexible, self-paced format, Duolingo enables users to tailor their learning experience to their individual schedules and preferences, making it an appealing option for learners at all levels. According to Bustillo (2017), Duolingo is designed to appeal to a diverse audience, including children, teens, and adults.

Founded in 2011 by Luis von Ahn and Severin Hacker, Duolingo currently offers 68 language courses in 23 languages, with additional development courses (The Guardian, 2011). The platform provides a variety of language exercises, including dictation, writing, and speaking practice for advanced learners. Munday (2016) notes that Duolingo's ease of use makes it a preferred option over traditional language learning methods and media. Furthermore, Grego and Vesselinov (2012) conducted a study evaluating Duolingo's effectiveness in language acquisition, and their findings indicate that students were not only satisfied with the platform but also enjoyed using it for their language learning.

Kusumadewi and Widyastuti (2018) further highlight that Duolingo's innovative use of gamification, which attracted widespread attention, earned it Google's "Best of 2013" award. A key feature of Duolingo's success lies in its gamified learning environment. As Huynh et al. (2019) explain, the application incorporates game-like elements, such as points, levels, and rewards, to foster motivation and enhance user engagement. These elements play a crucial role in fostering a sense of accomplishment among learners. This sense of achievement, in turn, encourages consistent practice, which is essential for effective language acquisition. When learners receive rewards for their progress, they experience a tangible

reflection of their efforts, motivating them to continue their learning journey. Consistent practice is key to reinforcing language skills, as it allows learners to build on previous knowledge and gradually improve over time.

On top of that, Duolingo's adaptive learning technology is another cornerstone of its educational model, leveraging algorithms to tailor the learning experience based on individual user performance and progress. As noted by Loewen et al. (2019), this adaptive approach allows the platform to address each learner's specific strengths and weaknesses, ensuring that content is personalized to meet their evolving needs. By providing immediate feedback and adjusting the complexity of exercises in real time, Duolingo systematically helps learners consolidate their knowledge and enhance their language skills effectively.

In addition to its adaptive capabilities, Duolingo offers a range of interactive exercises covering various aspects of language acquisition, including vocabulary, grammar, listening, speaking, and reading. These exercises are designed to simulate real-world communication scenarios, enabling users to develop practical language skills. For instance, users engage in translation tasks, listen to native speakers, and utilize voice recognition technology to practice speaking (Loewen et al., 2019). Duolingo also features "Duolingo Stories," which, according to Peterson (2020), provide engaging, contextually relevant narratives that enhance reading and listening skills. Additionally, Duolingo fosters collaboration through discussion forums where learners exchange insights and support each other. With its blend of gamification, adaptive learning, and diverse exercises, Duolingo stands out as a powerful tool in digital language education, effectively engaging users and personalizing learning experiences.

Beyond that, Duolingo's interactive listening features mark a clear departure from traditional methods. As Loewen et al. (2019) explain, Duolingo uses gamification and adaptive learning to create engaging, personalized experiences, simulating real-life communication with native speakers. In contrast, Munday (2016) notes that traditional methods often involve passive listening exercises, lacking engagement and immediate feedback. Vesselinov and Grego (2012) highlight that Duolingo's adaptive algorithms tailor tasks to individual progress, while Peterson (2020) points out that traditional approaches typically adopt a one-size-fits-all model. Duolingo's approach not only enhances interactivity but also improves language acquisition through real-time, personalized feedback.

III. METHODOLOGY
3.1 Research Settings and Design

This study was conducted across a variety of educational environments, encompassing formal classroom settings, self-directed learning scenarios, and online learning communities. The objective was to examine the role of Duolingo in enhancing interactive listening skills. By including a diverse range of learning contexts, the research aims to provide a comprehensive understanding of how Duolingo's listening exercises perform in different educational settings and their overall effectiveness in improving listening comprehension among learners with varying backgrounds and learning preferences.

3.2 The Sample:

The research involved a purposive sample from Marrakech, Morocco, comprising 38 language learners aged 17 to 20 with varying proficiency levels and 40 English teachers from the Marrakech-Safi province. This purposive sampling method helped gather detailed and relevant insights from individuals with specific characteristics or experiences, ensuring the data aligned directly with our research objectives.

3.3 Data collection:

A mixed-methods design was employed, integrating both quantitative and qualitative data collection approaches. To evaluate perceptions of Duolingo's effectiveness, two structured questionnaires, developed specifically for this study, were administered to both learners and educators. The questionnaires included both closed-ended questions to measure the extent of the effectiveness of Duolingo's interactive listening features and open-ended prompts to allow learners to provide qualitative feedback on their experience with the application and teachers to express their attitudes towards the application and its potential incorporation into the Moroccan curriculum.

The administration of the questionnaire was conducted online. Participants were informed that they were taking part in a study, which we briefly introduced, and that their responses will be invaluable in shaping the article. As with any research project, it is important to recognize several limitations to accurately frame the study's findings. Possible constraints encompass constrained generalizability stemming from the particular sample sourced from Marrakech, plausible bias in the purposive sampling technique as researchers may inadvertently choose participants who fit preconceived notions or biases, leading to results that may not be fully representative of the broader population. Furthermore, response bias and the study's confined demographic and geographical reach could impede the relevance of the conclusions. Furthermore, the

subjective interpretation inherent in data may undermine the reliability and validity of the study's findings. Furthermore, participants' responses to questionnaires may be susceptible to various biases, such as social desirability bias, potentially leading to inaccuracies or distorted perceptions regarding the effectiveness of Duolingo.

IV. FINDINGS AND DISCUSSION

This analysis examines the effectiveness of emerging technologies and trends in interactive listening, with particular emphasis on the Duolingo application. As digital tools become increasingly integral to language education, it is crucial to evaluate how Duolingo—one of the most widely used applications—compares to traditional methods. The objective of this study is to critically assess the impact of Duolingo on listening comprehension and user engagement, thereby providing insights into potential future developments in language learning.

3.4 Duolingo Usage Patterns Among Language Learners
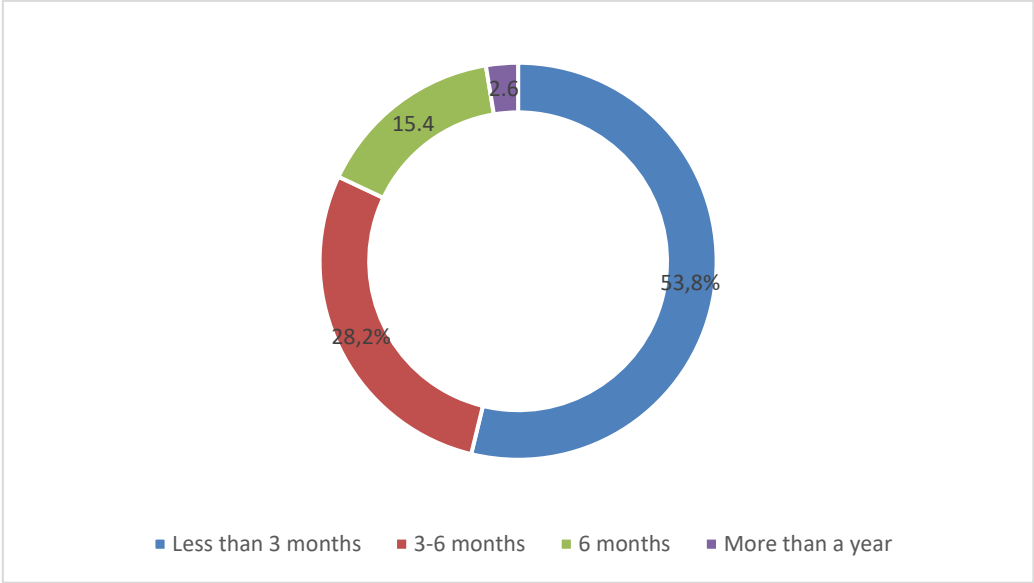

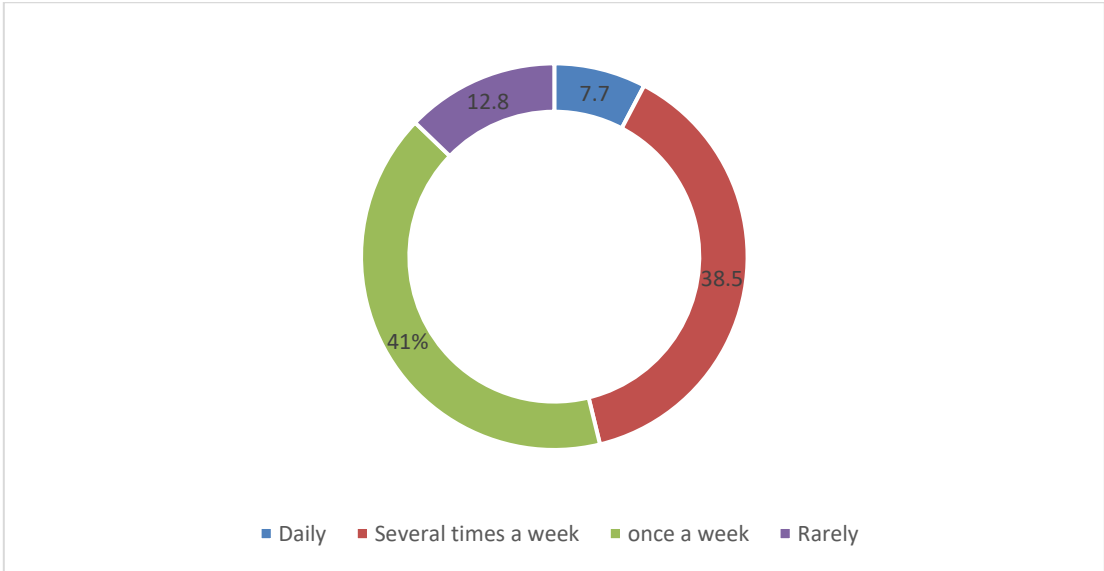*Fig.1: Duration of Language Learning Practices*

Fig.2: Frequency of Duolingo Usage for Language Learning

The duration and frequency of language learning practices play a critical role in the effectiveness of using applications for language acquisition. Data reveals that a majority of users (53.8%) have been utilizing language learning applications for less than three months, indicating a high level of initial engagement. However, only a small

fraction of participants (2.6%) continue their use beyond a year, suggesting potential challenges in sustaining long-term usage. Regarding frequency, 41% of users engage with the application once a week, while 38.5% use it several times a week, demonstrating moderate regularity. A smaller percentage, 7.7%, report daily use, which is typically associated with higher language retention and proficiency. The remaining 12.8% rarely use the application, highlighting variability in commitment levels. These patterns underscore the importance of designing language learning applications that not only attract users initially but also maintain their interest and encourage consistent, long-term engagement to maximize language learning outcomes.

These patterns suggest that while Duolingo successfully attracts a broad user base initially, there is a need for the application to implement strategies to enhance long-term engagement and regular use. One potential strategy is the introduction of more advanced content that can challenge users as they progress, ensuring that the application continues to meet their evolving language proficiency needs. Advanced content can include complex grammar lessons, nuanced vocabulary, and culturally rich materials that provide deeper insights into the language and its use in various contexts. Additionally, incorporating more gamified elements could significantly boost user motivation. Gamification, such as rewarding users with points, badges, or leaderboards, can create a sense of achievement and competition, encouraging users to return regularly.

Moreover, integrating Duolingo into formal educational contexts can significantly enhance long-term engagement. When used as a supplementary tool in classrooms, Duolingo can offer students additional practice outside of traditional lessons, reinforcing classroom learning and providing continuous language exposure. Teachers can monitor students' progress through the app, allowing for targeted interventions and personalized support based on individual needs. This integration can help bridge the gap between classroom instruction and self-directed learning, creating a more cohesive and comprehensive language learning experience.

Furthermore, educational institutions can use Duolingo to facilitate blended learning approaches, where digital tools complement face-to-face teaching. This hybrid model can cater to diverse learning styles and preferences, making language learning more accessible and flexible. The use of Duolingo in an educational context also helps students perceive the application not merely as a casual tool but as an integral part of their learning journey, thereby fostering a sense of responsibility and sustained engagement. By doing so, Duolingo can better meet the

dynamic needs of its users and support their sustained language learning journey, ultimately making the learning process more effective and enjoyable.

3.5 Active Engagement in Duolingo's Listening Skill Exercises

Active engagement in listening skill exercises provides a multitude of benefits for language learners, significantly enhancing their overall language proficiency. Engaging actively in listening tasks promotes better comprehension by requiring learners to process and understand spoken language in real-time. This active involvement helps in improving not only listening skills but also speaking abilities, as learners must often respond to what they hear, thus practicing their productive skills simultaneously. Additionally, such exercises often expose learners to a variety of accents and speech patterns, which broadens their auditory discrimination and adaptability in diverse communicative settings. Moreover, the interactive nature of these exercises fosters learner autonomy, encouraging students to take control of their learning process, set personal goals, and monitor their progress. This empowerment is crucial for maintaining motivation and commitment over time. Overall, active engagement in listening exercises is a key component of effective language learning, offering practical benefits that extend beyond mere comprehension to include improved speaking skills, enhanced vocabulary retention, and greater learner independence.

Concerning active engagement in Duolingo exercises specifically designed to enhance listening skills, the data reveals that a significant majority of participants (74.4%) actively engage in these exercises. In contrast, a smaller portion (25.6%) do not participate in these targeted listening activities. This suggests that Duolingo's listening exercises are perceived as valuable by a large proportion of its user base. However, the fact that a notable minority (25.6%) do not participate in these targeted listening activities indicates that there may be barriers or limitations preventing full engagement for some users.

One reason identified from the questionnaire for users not engaging specifically with listening activities is that their primary objective in using the Duolingo application is to develop other language skills rather than focusing on listening. Many users utilize Duolingo to enhance their vocabulary, grammar, reading, and writing skills. Consequently, their engagement with listening exercises is limited as their learning goals are centered on different aspects of language acquisition. As shown in Figure 3, the finding suggests that while Duolingo offers comprehensive tools for listening practice, its users may

prioritize other skills based on their individual learning needs and objectives.
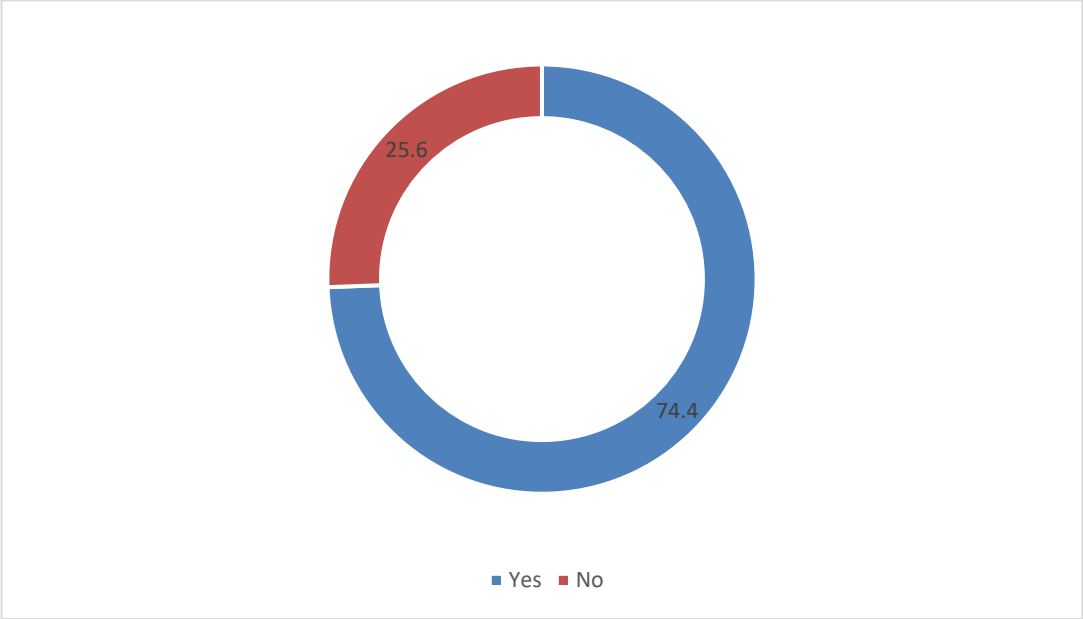

Fig.3: Engagement in Duolingo Listening Skill Exercises

3.6 Perceived Effectiveness of Duolingo in Enhancing Listening Comprehension Abilities

Duolingo plays a pivotal role in enhancing listening comprehension abilities through its diverse and interactive exercises designed to immerse users in auditory language practice. The platform includes activities such as listening to native speakers, completing dictation tasks, and responding to spoken prompts, all of which aim to improve real-time language processing skills. Moreover, Duolingo's integration of gamification elements—such as progress tracking, rewards, and competitive leaderboards—significantly boosts motivation and engagement, thereby promoting the consistent practice essential for skill development. The application's adaptive learning algorithm customizes listening exercises to align with users' proficiency levels, ensuring a balance of challenge and accessibility that fosters continuous improvement.
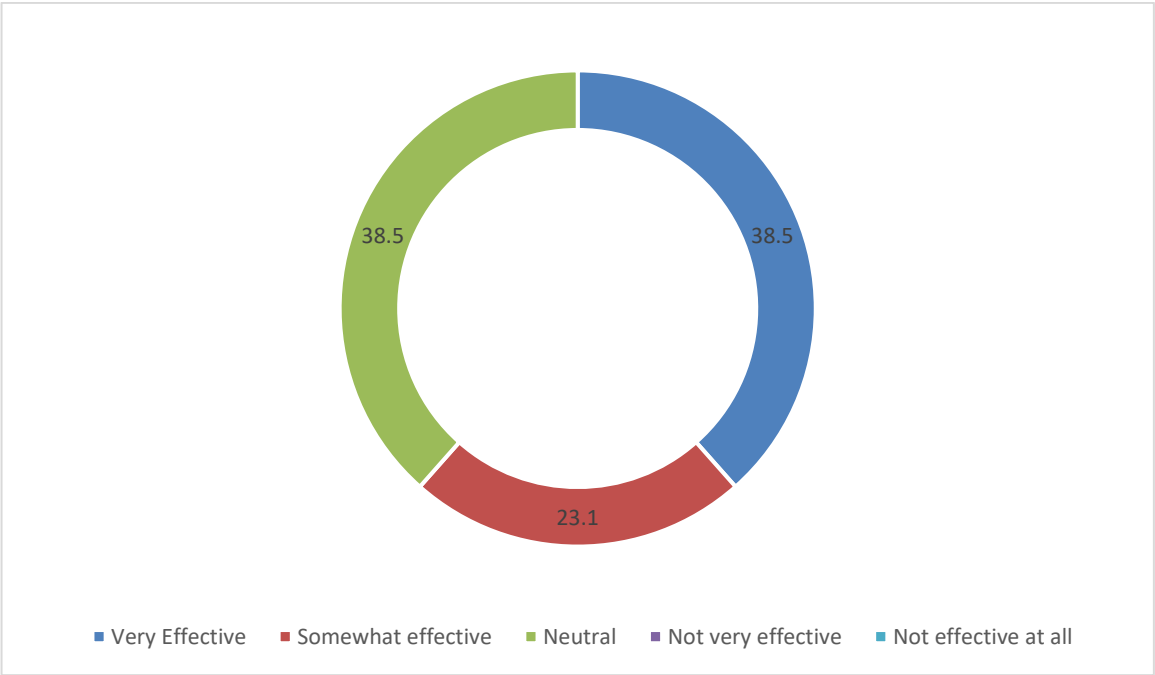

Fig.4: User Perceptions of Duolingo's Impact on Listening Skills

Regarding the perceived effectiveness of Duolingo in enhancing listening comprehension abilities, the data indicates that 38.5% of participants consider the platform to be very effective. Additionally, 23.1% of respondents find Duolingo somewhat effective in this regard, while an equal 38.5% maintain a neutral stance. Notably, no participants rated the

application as not very effective or not effective at all. This suggests a generally positive or neutral perception among users regarding Duolingo's impact on their listening comprehension skills.

As illustrated in Figure 4, we can conclude that there is a high level of active engagement with Duolingo's

listening exercises among users. Moreover, the perception of Duolingo's effectiveness in improving listening comprehension is generally positive, as indicated by the substantial proportion of users who find it very or somewhat effective. The neutral responses further suggest that while some users may not have strong opinions on its effectiveness, there is no significant dissatisfaction. Overall, these results underscore Duolingo's potential as a valuable tool for enhancing listening comprehension skills.

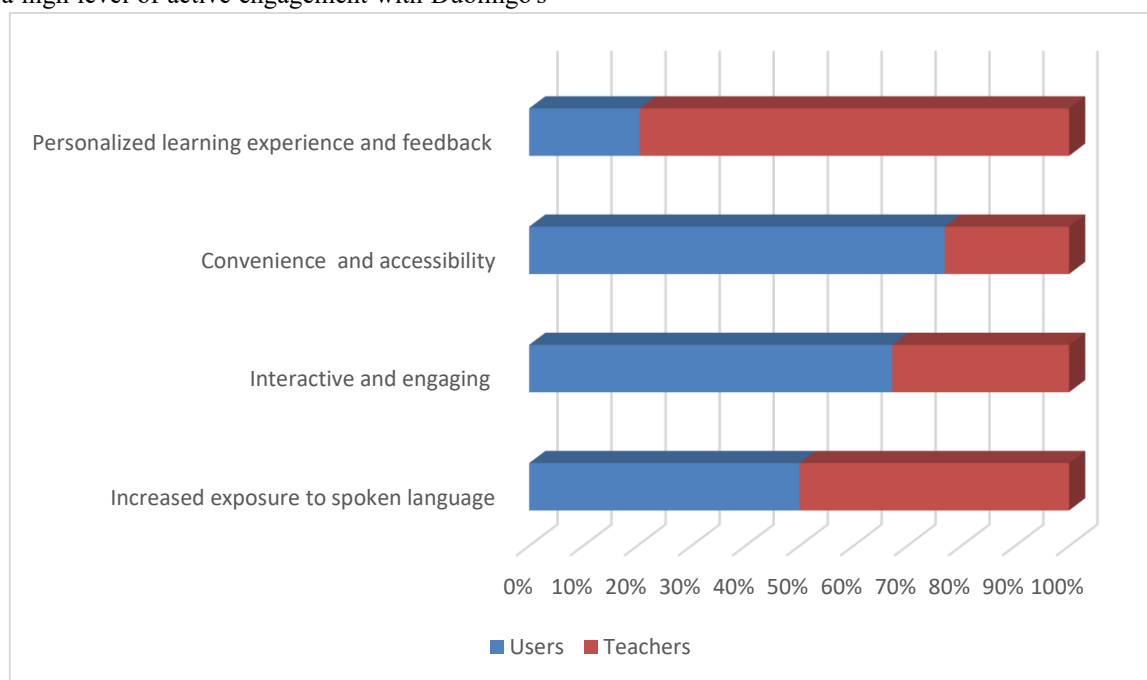### 3.7 Benefits of Using Duolingo for Listening Practice

Fig.5: Perceived Advantages of Duolingo for Listening Skills

The data comparing the perceived main benefits of using Duolingo for listening practice from both users and teachers reveals distinct perspectives. Both users and teachers equally recognize the benefit of increased exposure to spoken language, with 25.6% of each group highlighting this aspect. However, 20.5% of users identify the interactive and engaging nature of Duolingo as a main benefit, compared to only 10% of teachers. Additionally, convenience and accessibility are seen as significant benefits by 33.3% of users, whereas only 10% of teachers share this view. Conversely, the personalized learning experience and feedback provided by Duolingo are highly valued by 60% of teachers, compared to 15.4% of users. As depicted in Figure 5, while users tend to prioritize the convenience and engaging aspects of Duolingo, teachers place greater importance on the personalized learning experience and feedback the application offers. While both

users and educators acknowledge the advantages of increased exposure to spoken language facilitated by Duolingo, their disparate perspectives on engagement, convenience, and personalized learning underscore the multifaceted nature of the platform's benefits. This highlights the importance of considering both user experience and pedagogical effectiveness in the assessment of language learning tools like Duolingo within scholarly discourse.

3.8 Listening Practices Challenges

Listening practices in foreign language learning frequently present a range of challenges that can impede learners' progress. A primary difficulty lies in the comprehension of diverse accents and speech nuances, which can vary significantly from the standardized language forms typically taught in educational settings.

Furthermore, many learners encounter obstacles with the speed of spoken language, finding it challenging to keep pace with native speakers who often communicate rapidly and employ colloquial expressions. The lack of variety in listening exercises also poses a significant hindrance, as repetitive and predictable practice materials may not adequately prepare learners for the multifaceted nature of real-life conversations. Additionally, learner motivation can diminish if immediate improvements are not evident or if the exercises fail to engage them effectively. Technical issues, such as poor audio quality or unreliable internet connections, can further disrupt listening practice and diminish its effectiveness. These challenges underscore the necessity for well-designed, varied, and engaging listening activities that address the specific needs and preferences of language learners.

Duolingo has effectively tackled several key challenges in language learning, particularly in enhancing listening skills. By incorporating diverse audio recordings, the application helps learners become accustomed to different accents and speech patterns, thus improving their comprehension in various contexts. The application also offers a variety of listening exercises, including dialogues, stories, and interactive tasks, which mitigate the repetitiveness of traditional methods and better prepare learners for real-life conversations. Through these features, Duolingo has created an engaging, adaptable platform that effectively addresses the diverse needs of language learners.
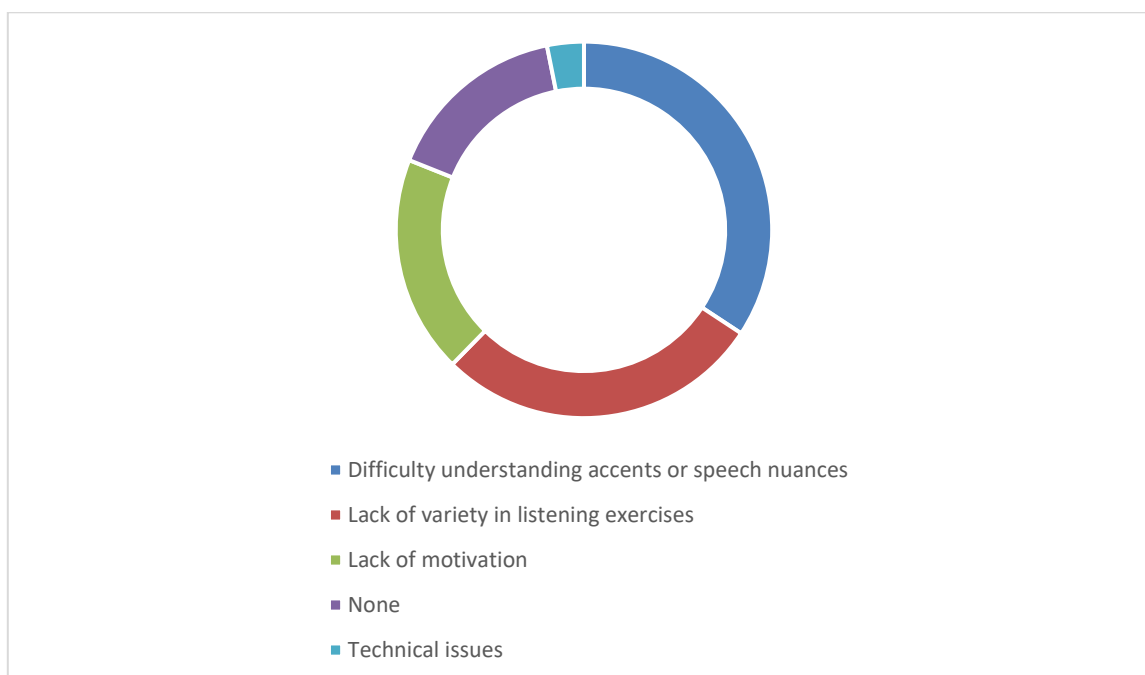

Fig.6: Challenges Encountered in Duolingo Listening Practice

The data reveals a range of challenges faced by participants in utilizing Duolingo for listening practice. Notably, a significant portion (28.2%) reported difficulty in understanding accents or speech nuances, indicating a barrier to effective comprehension. The struggle with different accents, although challenging, is ultimately beneficial for language learners. Exposure to a variety of accents is crucial as it mirrors the linguistic diversity encountered in real-world communication. This exposure enhances learners' auditory discrimination and comprehension skills, equipping them to understand and engage with speakers from diverse linguistic backgrounds. By encountering different accents, learners develop greater flexibility and adaptability in their listening abilities, which are essential for achieving true language proficiency. Because all participants have been using Duolingo for only a short period of time, as shown in Figure 1, they may currently struggle with this aspect; however, in the long term, this exposure will likely cease to be a problem. Therefore, despite the initial difficulties, the experience of grappling with various accents plays a positive and integral role in the language learning process.

Additionally, 23.1% expressed dissatisfaction with the lack of variety in listening exercises, suggesting a desire for more diverse content to enrich their learning experience. Lack of motivation was cited by 15.4% of participants as a challenge, potentially hindering sustained engagement and progress in language learning activities. Technical issues, although reported by a smaller percentage (2.6%), nonetheless pose occasional disruptions in the usability of the Duolingo platform. Conversely, 13% of respondents

reported no specific challenges, indicating a relatively smooth experience with Duolingo's listening exercises.

Alternative challenges were articulated by participants, elucidating concerns such as the recurrence of specific phrases, which renders listening exercises predictable, and the pace of speech. Some participants noted

the challenge of tasks that require comprehension after only a single listening opportunity, highlighting the rapid pace of speech as a contributing factor to this difficulty.

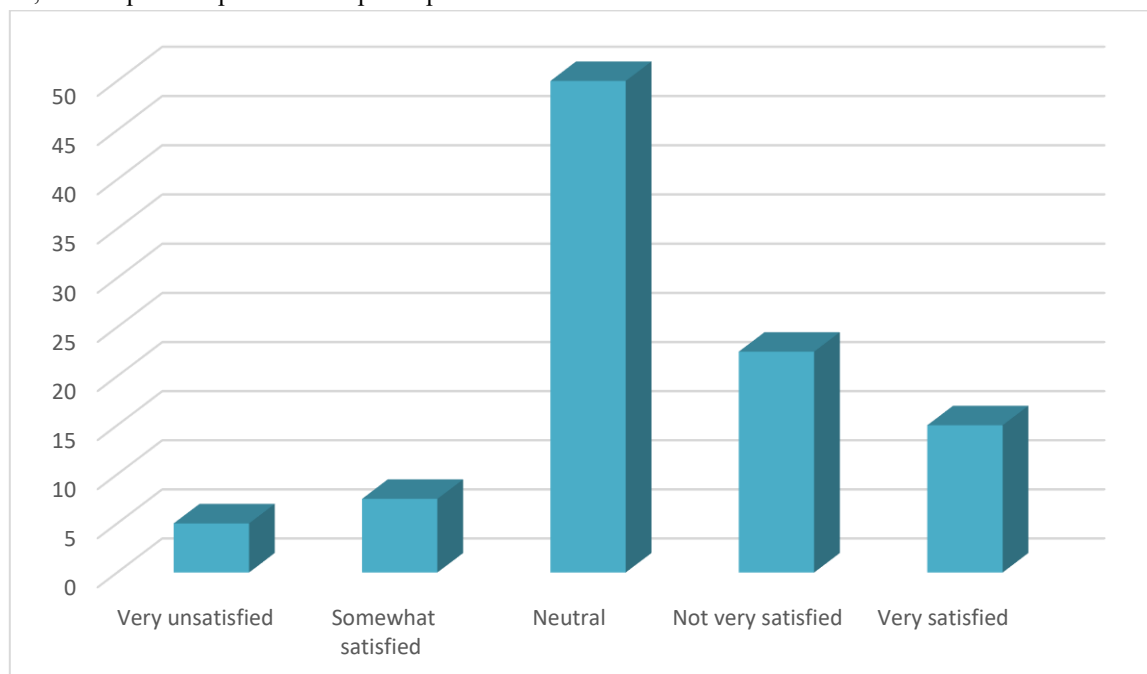### 3.9 Satisfaction with Duolingo's Interactive Listening Tasks

Fig.7: User Satisfaction with Duolingo's Interactive Listening Tasks

The data on user satisfaction with Duolingo's interactive listening tasks reveals a spectrum of responses, indicating mixed levels of satisfaction. The predominant neutral stance (50%) suggests that while Duolingo's listening tasks may meet basic expectations, they do not strongly engage or dissatisfy a significant portion of users. However, the notable percentage of respondents who reported being not very satisfied (22.5%) and very unsatisfied (5%) underscores areas for potential improvement, particularly in enhancing the complexity and variety of the listening tasks. On the other hand, the presence of somewhat satisfied (7.5%) and very satisfied (15%) users indicates that the platform's listening features are well-received by a segment of learners, demonstrating certain strengths that contribute to user satisfaction. Overall, these findings suggest that while Duolingo's interactive listening tasks are generally adequate, there is substantial room for enhancement to better meet the diverse needs and preferences of its user base.

Overall, the findings of this study underscore the considerable potential of Duolingo in bolstering listening comprehension skills. The high level of initial engagement with Duolingo's interactive listening exercises reflects its appeal and perceived effectiveness among users. While

some challenges, such as difficulty understanding accents and a desire for more diverse content, have been identified, these can be viewed as opportunities for improvement rather than insurmountable obstacles. Moreover, the recognition of the benefits of exposure to diverse accents highlights the intrinsic value of Duolingo's approach to language learning. Altogether, the findings provide a positive outlook on the role of Duolingo in language education and emphasize the importance of ongoing refinement to further enhance its efficacy in supporting language learners worldwide.

Having examined the data gathered from users of Duolingo, indicating both their positive engagement with the application and the challenges they face, as presented in Figure 3 and 6, it is evident that integrating Duolingo into the curricular framework could offer significant benefits. The integration of language learning applications into educational curricula has undergone significant development over the past few decades. The foundational efforts in this domain can be traced back to the advent of computer-assisted language learning (CALL) programs in the 1980s and 1990s, which set the stage for the subsequent rise of mobile-assisted language learning (MALL) technologies. The proliferation of smartphones and tablets in the late 2000s marked a transformative period in

language education, providing unprecedented access and flexibility.

A pivotal study by Burston (2014) reviewed the effectiveness of MALL over a decade, highlighting the experimental adoption of mobile applications such as Duolingo and Babbel in classroom settings. Burston emphasized the transition from desktop-based CALL to more user-friendly mobile platforms, which offered enhanced engagement and flexibility for language learners.

Sung et al. theor(2015) conducted a comprehensive meta-analysis on the use of mobile devices in language education, revealing significant positive effects on learning outcomes. Their findings suggested that mobile applications facilitated personalized learning experiences, increased learner motivation, and provided the flexibility that traditional classroom environments often lacked.

Research by Steel (2012) examined the integration of language learning applications in Australian schools, demonstrating their role in supporting differentiated instruction. Steel found that applications like Duolingo provided immediate feedback, essential for language acquisition, and were particularly effective in enhancing students' listening and speaking skills.

Further, Rosell-Aguilar (2018) explored the impact of mobile applications on Spanish learners, revealing substantial improvements in student engagement and language proficiency when these tools were used alongside traditional classroom instruction. Rosell-Aguilar's study underscored the efficacy of a blended learning approach, where mobile applications complement and reinforce conventional pedagogical methods.

Collectively, these studies illustrate the evolution of language learning applications from supplementary tools to integral components of contemporary language education. They underscore the potential of these applications to enhance traditional teaching methods by offering personalized, flexible, and engaging learning experiences.

This suggestion is further examined by insights gathered from teachers, who recognize the application's potential as a supplementary tool for language learning. Integrating Duolingo into the curriculum not only aligns with the preferences and practices of language learners but also provides educators with a valuable resource to enhance their teaching methods and address the diverse needs of students.

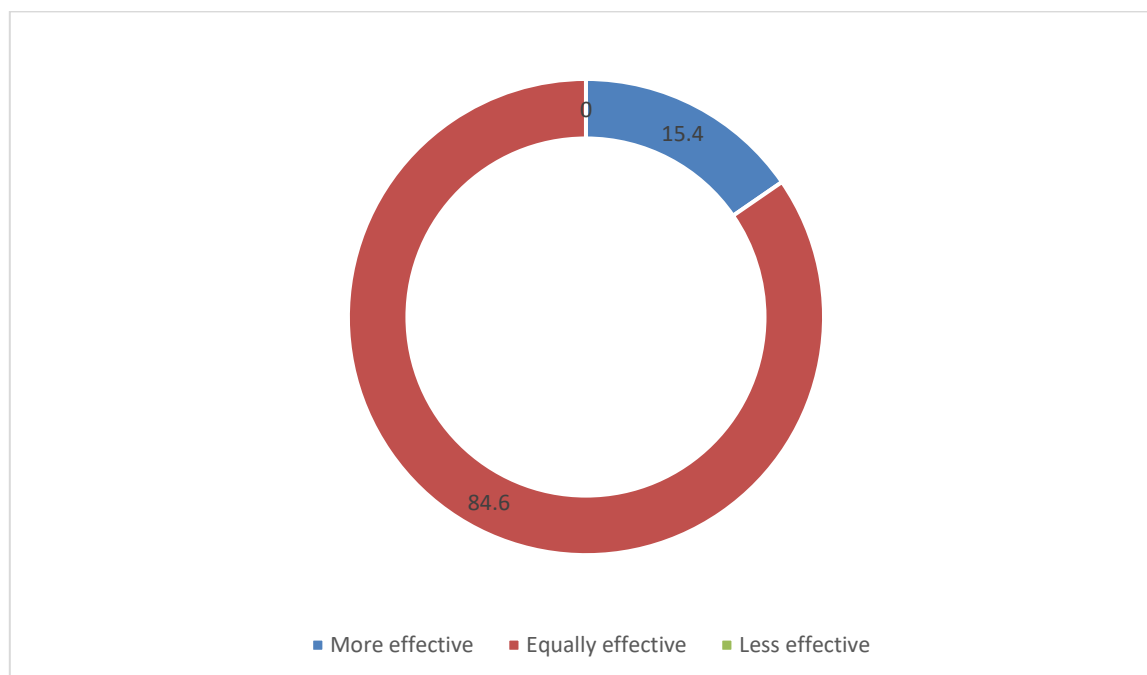### 3.10 Teachers' Perspectives on Duolingo

Fig.8: Teachers' perspective: Duolingo vs. Traditional Listening Exercises in Terms of Effectiveness

The data concerning the comparative effectiveness of Duolingo versus traditional listening exercises reveals insightful trends. A significant majority of respondents, 84.6%, perceive Duolingo as being equally effective compared to traditional listening exercises or activities.

Meanwhile, 15.4% of participants believe that Duolingo is more effective, highlighting the application's potential advantages in certain contexts. Notably, none of the respondents indicated that Duolingo is less effective than traditional methods, suggesting a general consensus that the

application at least matches conventional practices in effectiveness. Results drawn from Figure 8 underscore Duolingo's viability as a tool for listening practice, aligning

closely with established methods while also offering unique benefits that some users find superior.
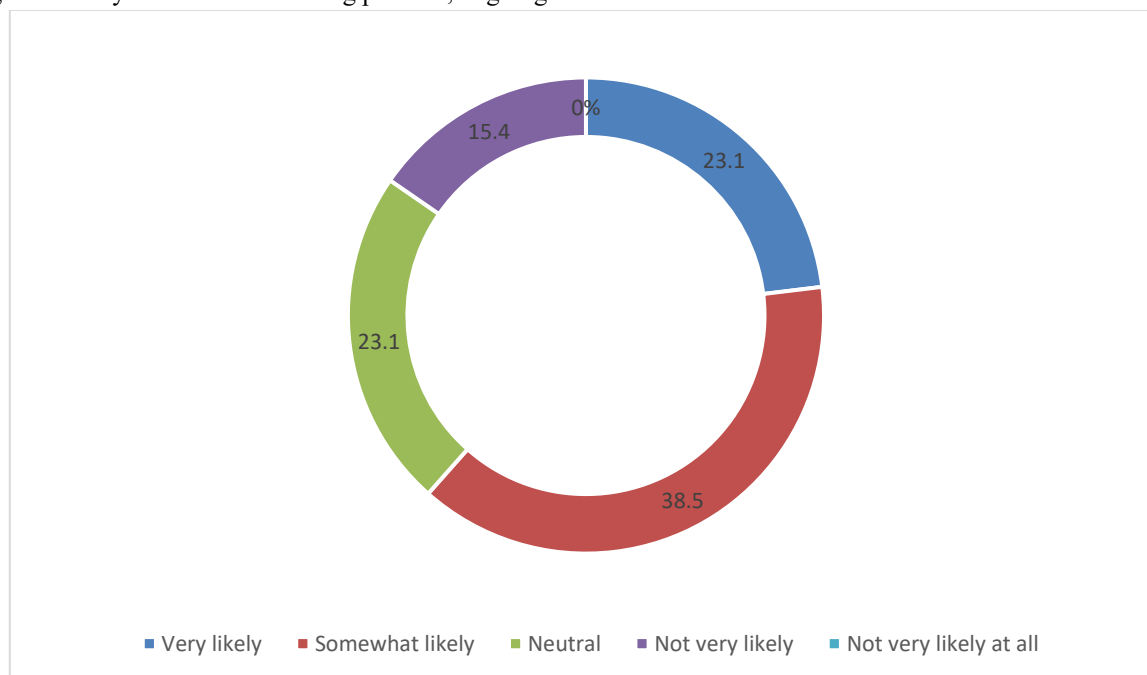

Fig.9: "Teacher Likelihood of Recommending or Using Duolingo for Listening Practice in the Future"

The results of the question, "How likely are you to recommend, continue recommending, or using Duolingo for listening practice in the future?" indicate a predominantly positive outlook among teachers. Specifically, 23.1% of respondents reported being very likely to recommend or continue using Duolingo for listening practice, and 38.5% indicated that they are somewhat likely to do so. This combined figure of 61.6% reflects a significant inclination towards endorsing the application. Conversely, 23.1% of participants remained neutral, expressing neither strong support nor opposition. A smaller portion, 15.4%, reported being not very likely to recommend or continue using the application. Notably, none of the respondents expressed a complete lack of recommendation, as evidenced by the 0% selecting "Not very likely at all." These findings suggest a generally favourable perception of Duolingo's efficacy in enhancing listening skills among its users.

The findings from the open-ended question, "How do you envision incorporating Duolingo or similar technologies into future language learning curricula?" reveal a nuanced perspective among respondents. Several participants acknowledge the potential benefits, suggesting that integrating such technology could enhance engagement and interest in the learning process, ultimately leading to improved outcomes. For instance, some see these tools as a

way to make learning more interactive and appealing, which could increase student motivation and participation.

However, there is considerable skepticism, particularly regarding the applicability of Duolingo within the Moroccan educational context. Several respondents express doubts about the cultural appropriateness and practicality of integrating Duolingo into the curriculum. They argue that while Duolingo might be beneficial when used voluntarily by students, its effectiveness may diminish if mandated. Concerns are raised about whether the application's content aligns with the cultural and educational needs of Moroccan students, as well as the extent to which this integration could be achieved given current educational constraints in Morocco.

Moreover, some respondents highlight the potential disconnect between Duolingo's predominantly Western-oriented content and the specific linguistic and cultural nuances of Moroccan education. They emphasize that while Duolingo offers a flexible and user-friendly platform, its integration into formal curricula would require significant adaptation to ensure cultural relevance and alignment with local educational goals.

Despite some positive views on the potential advantages of such technologies, the overarching sentiment emphasizes the importance of considering cultural and contextual factors in the implementation of technology-

enhanced language learning strategies. These findings underscore the need for a tailored approach that takes into account the specific educational environment and cultural context to ensure successful integration and efficacy. Therefore, any effort to incorporate Duolingo or similar technologies into Moroccan schools must be carefully planned and contextualized to address these concerns and maximize the benefits for learners.

V. CONCLUSION

Language learning applications have been criticized for their limitations in supporting the acquisition of vocabulary and grammar in contexts that are often disconnected from real-world usage (Krashen, 2014). Such platforms are often viewed as effective only within decontextualized learning environments, However, interactive listening exercises, such as those offered by applications like Duolingo, play a significant role in developing these skills, as they provide targeted practice through personalized learning experiences that cater to individual needs. Additionally, the integration of technology in language education allows learners convenient access to diverse listening resources, while adaptive learning features promote sustained engagement and improve language acquisition. Thus, technology-enhanced learning platforms offer valuable opportunities for improving listening proficiency and advancing overall language skills. Loewen et al. (2020, p. 19) argued that the field of second language acquisition (SLA) should reconsider its perception of language learning applications. Rather than viewing these apps merely as tools for repetitive grammar drills, researchers are encouraged to recognize their broader pedagogical potential. This perspective calls for a shift towards appreciating the multifaceted instructional value of such platforms, which can offer interactive and adaptive learning experiences that go beyond traditional grammar-focused exercises. By doing so, language learning applications can be integrated into a more comprehensive pedagogical framework that supports a range of language skills.

In the Moroccan educational context, the incorporation of Duolingo into language learning curricula represents a multifaceted endeavor that presents both promising opportunities and notable challenges. The data shows that Duolingo has significant potential in enhancing listening comprehension skills. The high level of initial engagement with its interactive listening exercises indicates the platform's strong appeal and perceived effectiveness among users, further highlighting its value as a tool for developing language proficiency. Also, insights gleaned from teachers' perspectives offer invaluable contributions to

understanding the feasibility and potential impact of incorporating such technology within Moroccan classrooms. While some educators express optimism about Duolingo's potential to enhance learning outcomes, citing its user-friendly interface, gamified elements, and interactive features as engaging tools for students, others raise valid concerns regarding its cultural appropriateness and practicality within the specific educational landscape of Morocco. These concerns may stem from questions surrounding the alignment of Duolingo's content with local curriculum standards and educational objectives, as well as its compatibility with prevalent pedagogical approaches and methodologies employed in Moroccan classrooms. Additionally, issues related to the accessibility of technology and internet connectivity may arise, particularly in underserved or rural areas where resources may be scarce or unreliable.

Therefore, the use of language platforms such as Duolingo in the Moroccan context offers considerable potential for enhancing English language proficiency, particularly in listening skills. Through interactive and adaptive exercises, these platforms can provide targeted listening practice, addressing learners' specific needs while contributing to overall language development. This makes such technology an effective tool for improving language education in Morocco. However, the successful integration of Duolingo into the language learning curricula necessitates a comprehensive approach that considers these factors while also providing ongoing support and professional development opportunities for educators to effectively leverage the platform's potential. Furthermore, collaborative efforts between educational stakeholders, policymakers, and technology developers are essential to address these challenges and optimize Duolingo's effectiveness as a supplementary tool for language learning in Morocco. Through continued research, evaluation, and adaptation, Duolingo and similar language learning applications can contribute positively to the educational landscape, providing students with innovative opportunities to develop their language skills and thrive in an increasingly interconnected world.

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