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MACHINE LEARNING ANALYSIS EMPOWERED EVALUATION OF ENGLISH LEARNING APPS FOR USER LEVEL

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Abstract

With the modern age of information technology, applications to teach English have become important factors in improving linguistic competency and communication skills in global societies. Fluency in the English language is becoming one of the most important personal, academic, and professional resources. Duolingo, Rosetta Stone, Babbel, HelloTalk, Tandem, FluentU, BBC Learning English, and LingoDeer, among others, have become the new paradigm of teaching English as a second language by providing interactive, user-friendly, and user-centered digital tools. The combination of gamification, adaptive learning, multimedia materials, and real-time pronunciation and grammar tips, hidden in these apps, helps to make the learning process engaging and effective. This research paper performs a usability analysis of the English learning applications with special references to Duolingo and Rosetta Stone in the context of understanding how efficient and user-satisfied these applications are and what can be done to improve them. The study uses a survey research design, which is cost-effective, fast in data collection, and capable of giving in-depth information regarding the perception of users and patterns of behavior. The questionnaire had fifteen structured questions that were intended to evaluate other attributes of usability, such as interface design, learning flexibility, tutor efficacy, engagement mechanism, and user motivation. The respondents were divided into beginner, intermediate and expert levels of proficiency to make sure that the findings were representative of a wide range of user experiences. The study findings

indicate that, although both Duolingo and Rosetta Stone are successful in using gamified and adaptive learning features to maintain the interest of the learner, some usability aspects still have weaknesses. A large percentage of the respondents (about 70 percent) found the user interfaces of the two applications to be oversimplified and more appropriate for children or those learners with low levels of understanding and thus not as attractive to high-level users. Additionally, the response indicated that there would be a need for diverse versions of the application that would suit different levels of learning, and the inclusion of qualified tutors for users with a higher level of proficiency. Nevertheless, the participants have admitted that the apps are effective in ensuring regular learning habits by using app functions like progress tracking, daily goals and interactive exercises. On the whole, the results highlight the paramount significance of the constant usability evaluation in educational technology development. Increasing the flexibility and inclusivity of English learning applications might significantly increase user interaction and learning. The research finds that the incorporation of user feedback mechanisms, beneficial content and personalization of the interface will be critical in the further development of the English learning apps, hence making them relevant and useful in the global acquisition of the English language

INTRODUCTION

English learning applications have been a central figure in the current era of IT that providing learners with an efficient and convenient platform for improving their language abilities. To many, especially in a world where people stay in touch with each other, mastery of English has turned out to be a marketable commodity for personal, academic and professional development [1]. These applications offer a clustered mechanism to allow users to undertake self-directed education [2][3]. These apps are interactive, which often include games in them, such as elements and multimedia resources, making the learning process interesting and entertaining. Moreover, numerous applications provide an opportunity to receive a real-time response about the pronunciation and grammar, covering particular points of work [4][5]. It may be in traveling or in career growth, but what is valuable about English learning apps is that they give the learner the tools that would help them conquer the world and survive in a global environment [6].

There are some well-known English learning applications.

Duo lingo: Duolingo is an English study application that provides an extensive variety of languages. It incorporates exercises, games, and quizzes to learn vocabulary, grammar and pronunciation [7].

Rosetta Stone: Rosetta Stone is the one with the immersive style of language learning, which is more visual and animation-based to ensure that the languages are taught inherently [8].

Babbel: Babbel is a practical language instruction that teaches the language the conversation. It is made user-friendly and individualized based on learning objectives [9].

Hello Talk: Hello Talk is a language exchange platform that enables language learners to interact with native speakers in other parts of the world. Users are able to chat, place voice messages and get corrected by native speakers [10].

Tandem: Tandem is another language exchange app that connects users with native speakers for conversation practice. It supports text, voice, and video communication [11].

Fluent U: Fluent U uses real-world videos, like movie trailers and music videos, to teach languages

in context. It provides an immersive and entertaining way to learn [12].

BBC Learning English: The BBC Learning English app offers a variety of multimedia content, including videos, articles, and quizzes, to help learners improve their English skills [13].

Lingo deer: Lingo Deer covers a variety of languages and employs a combination of grammar explanations, vocabulary practice, and games to teach languages in a comprehensive manner [14].

2. Literature review

English learning apps offer learners a flexible and accessible means to enhance their language skills. In an increasingly interconnected world, proficiency in English has become a valuable asset for personal, academic, and professional growth. For usability evaluation of English learning apps, we have used the method of surveys because, firstly, surveys are comparatively cost-effective to perform as they are relatively cheap to set up and support. Furthermore, the data gathered from surveys can be quickly and conveniently analyzed, allowing the development team to swiftly make design optimizations based on customer feedback. Lastly, surveys, when properly designed, can provide insight into user behavior and preferences, which can be used to drive decisions [15].

The real value added in the usability evaluation of English learning apps is when people give their feedback. The process not only enabled me to see the strong sides of the apps but also illuminated the areas in which I could see the enhancement of the overall usability. We had a survey where we posed questions to our users regarding the apps [16].

Notable characteristics of Duo Lingo and Roston stone app are that it is written below.

Playing games during Learning: Duolingo is a language learning strategy that uses some gaming elements, including points, levels, and rewards, so that the language learning process is enjoyable and exciting.

Interactive Lessons: The application also offers interactive classes that will address the different skills of the language, such as listening, speaking, reading, and writing. A combination of grammar and vocabulary is also common in lessons.

Adaptive Learning: Duolingo incorporates adaptive learning technology to customize the learning process. It modifies the lessons according to the individual's progress and strengthens the weak areas and changes the difficulty [17].

Auditory Practicum: The users are able to do pronunciation by listening to native speakers and comparing it to their own voice. The aspect assists in enhancing speaking and listening.

Duolingo Stories: Duolingo Stories are brief interactive stories that can be read and listened to by users. This aspect increases the understanding and contextual vocabulary.

Progress Tracking: Duolingo also has DuoLingo, where users are able to monitor their progress in the application, with a display of achievements, lessons completed, and streaks of their day. This is an aspect that encourages users to have regular learning routines [18].

Duolingo Plus: Duolingo Plus is a service that comes with ad-free viewing, offline lesson access, and lesson tracking. It is also more convenient for the users who desire a better learning experience.

Discussion Forums: Duolingo is a social network where people can discuss language learning experiences and ask questions, as well as share tips. This is an element of the community that is social in the learning process.

Daily Goals: They can also have daily learning objectives and this is helpful to have a systematic and consistent language learning process. Achieving objectives on a daily basis helps to keep a learning streak [19].

Duolingo Events: Duolingo Events are local gatherings that are carried out by users to practice the language and cultural exchange. This aspect facilitates community involvement and real-world use of language.

One of the notable aspects of the Rostan English learning app is.

Immersive Learning Method: Rosetta Stone has an immersion approach where the learning process places the students in the language environment without translation. The purpose of this approach is to simulate the process of acquiring the first language [20].

Interactive Lessons: The application has interactive lessons, which address the different language skills, such as vocabulary, grammar, speaking, and listening. Lessons will include the matching of images with spoken words and sentence making.

The Speech Recognition Technology: Rosetta Stone applies the speech recognition technology to measure and give feedback on the pronunciation of the users. This allows learners to acquire better skills in English speaking by comparing their pronunciation with that of the native speakers.

Live Tutoring (Rosetta Stone Live): There are other versions of Rosetta Stone that provide live tutoring with the option for users to practice talking with a live tutor. These meetings offer a platform for instant communication and feedback [21].

Phrasebook: The application also has a phrasebook, where one can learn common phrases and expressions in context. It is a helpful property in the context of application in real life.

Stories: Rosetta Stone Stories are stories that are set in the target language and the user can read and listen to stories and understand them and learn vocabulary.

Adaptive Learning: Like Duolingo, the Rosetta Stone uses adaptive learning technology to make the learning experience more personal. The lessons are flexible according to personal advancement and achievement.

Progress Tracking: The app allows users to keep track of their progress, learning lessons covered, their successes, and their general competence. This aspect gives one the feeling of achievement and inspiration [22].

Offline Access: There are even some versions of the Rosetta Stone that provide offline lessons, where a user can still proceed with their language learning in spite of being offline.

Extended Learning Resources: Rosetta Stone often provides additional resources, including games, stories, and cultural insights, to complement the core language lessons and enhance the overall learning experience [23].

3. Adopted Methodology

For usability evaluation of English learning apps, we have used the method of surveys because, firstly, surveys are comparatively cost-effective to perform as they are relatively cheap to set up and support [24][25]. Furthermore, the data gathered from surveys can be quickly and conveniently analyzed, allowing the development team to swiftly make design optimizations based on customer feedback. Lastly, surveys, when properly designed, can provide insight into user behavior and preferences, which can be used to drive decisions [26][27].

Data Collection

Data collection for Usability Evaluation of English learning apps is just as important as the overall process of evaluating the effectiveness of the app [28]. This survey is designed to assess the different attributes of English learning apps and provide recommendations to improve these attributes [29][30]. There are 15 questions, and all the answers to these questions will help us assess the attributes of the app [31][32].

4. Questions

No	Question	A	B	C	D
1	Duo lingo employs a gaming approach to language learning, incorporating elements of gaming, such as points, levels, and rewards motivate a person to learn English	Agree	Disagree	Neutral	Strongly disagree

2	Does duo lingo app help us to improve English is such an extent that after using it, we can write good English in competitive exams like CSS?	Agree	Disagree	Neutral	Strongly Disagree
3	Does duo lingo app help experts in English to improve their English to the next level?	Agree	Disagree	Neutral	Strongly Disagree
4	Does duo lingo app keep kids addicted to it due to its game feature?	Agree	Disagree	Neutral	Strongly Disagree
5	Is duo lingo app interface so generic that it does not reflect a professional English learning app?	Agree	Disagree	Neutral	Strongly Disagree
6	Is Duo lingo app provides interactive lessons that cover various language skills, including listening, speaking, reading, and writing. Is duo lingo app adapt lessons based on individual progress, which helps each person to learn English effectively [33]?	Agree	Disagree	Neutral	Strongly Disagree
7	Is practicing pronunciation by listening to native speakers in the app beneficial to help users learn English?	Agree	Disagree	Neutral	Strongly Disagree
8	Does Duo lingo Stories feature give users a good experience	Agree	Disagree	Neutral	Strongly Disagree
9	Duo lingo allows users to track their progress through the app, helping users to stay motivated.	Agree	Disagree	Neutral	Strongly Disagree
10	Duo lingo Events feature help users improve English?	Agree	Disagree	Neutral	Strongly Disagree
11	Rosetta Stone often provides additional resources, including games, stories, and cultural insights, to complement the core language lessons and help to improve English.	Agree	Disagree	Neutral	Strongly Disagree
12	The online tutors in the Rosetta Stone app are well-qualified teachers	Agree	Disagree	Neutral	Strongly Disagree

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13	Rosetta Stone is known for its immersive method, where learners are exposed to the language in context without translation helps to improve English [34].	Agree	Disagree	Neutral	Strongly Disagree
14	The app includes a phrasebook that allows users to learn common phrases and expressions in context helps users to improve their English.	Agree	Disagree	Neutral	Strongly Disagree

5. Survey Results

The survey initially started with 400 participants, and after filtering, there are only 160 relevant participants who agreed to participate [35][36]. They also performed the tasks allocated to them.

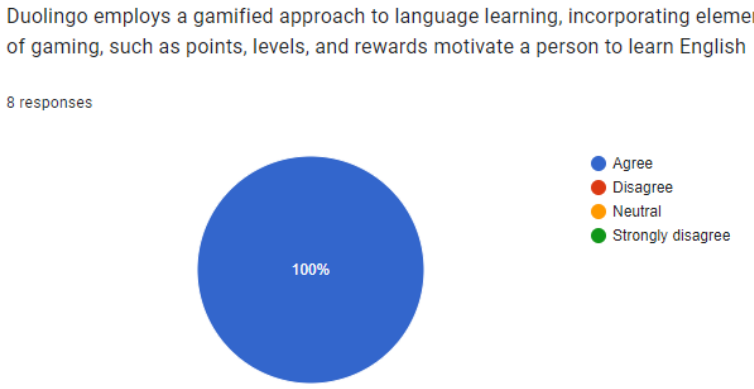


Figure 1: Gamoing Approach for Language Learning

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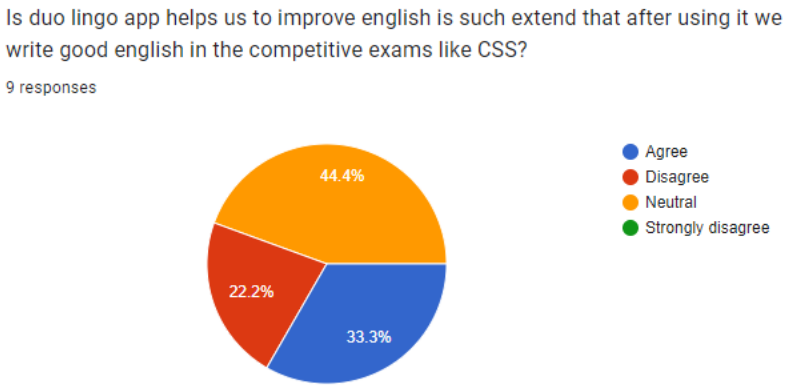


Figure 2: Apps Help to Improve English Learning

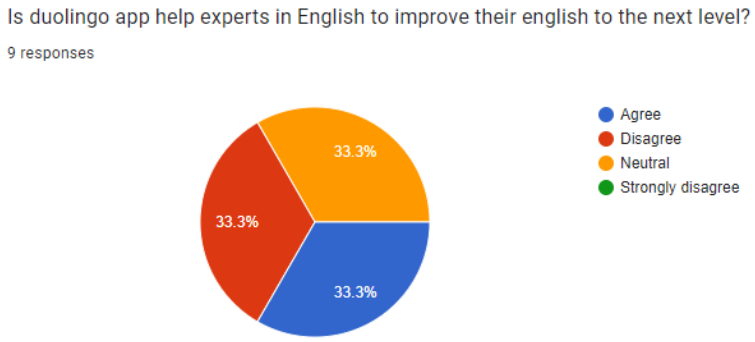


Figure 3: Experts English Imroved by English Learning Apps

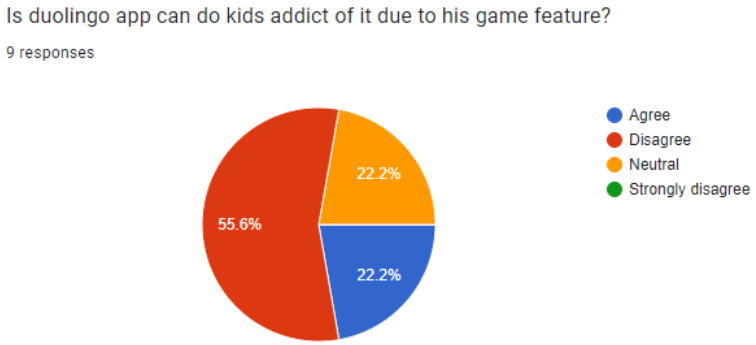


Figure 4: Apps Addicts the Kids while Learn through Gaming English Learning Apps

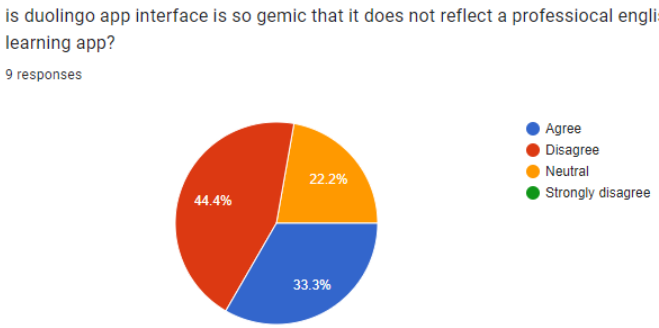


Figure 5: Interface Professionally Learning or Not

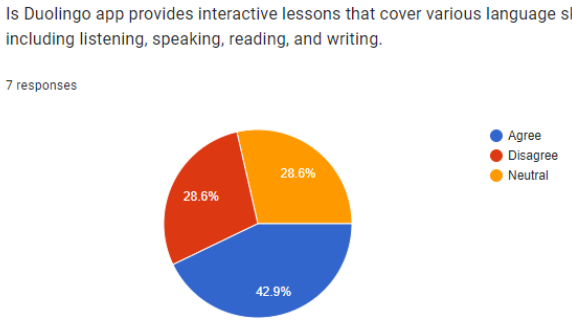


Figure 6: Interactive Lessons Provisions

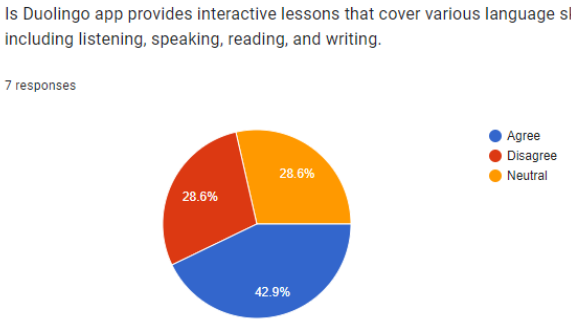


Figure 7: Interactive Lessons Provide Language Skills or Not

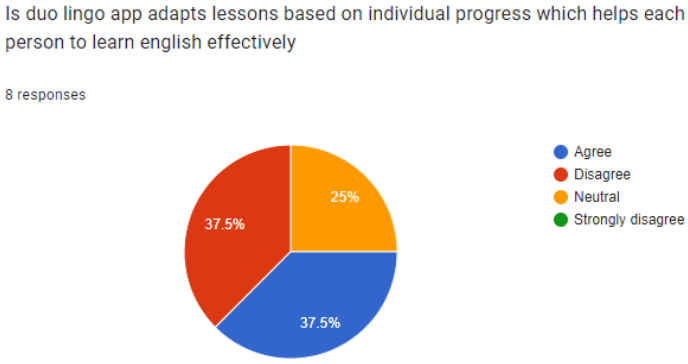


Figure 8: Effectiveness of Apps

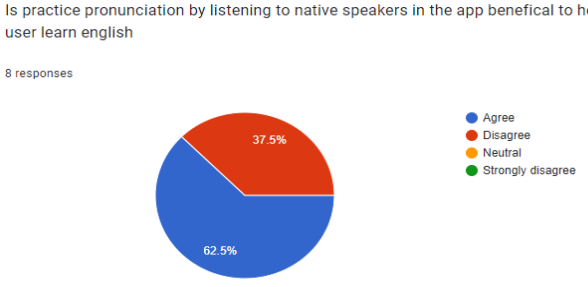


Figure 9: Pronunciation Improvement

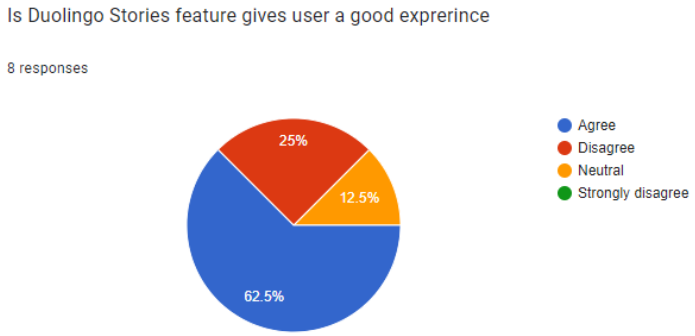


Figure 10: User Satisfaction

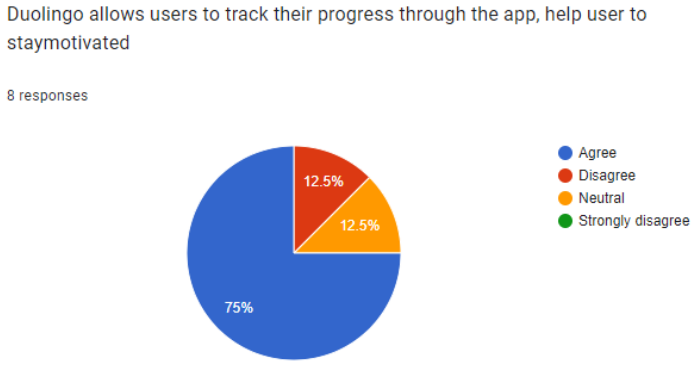


Figure 11: Track Progress and Motivation

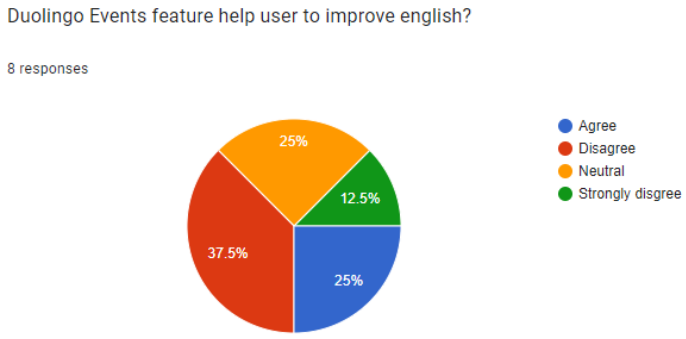


Figure 12: Duolingo Features for Improvement

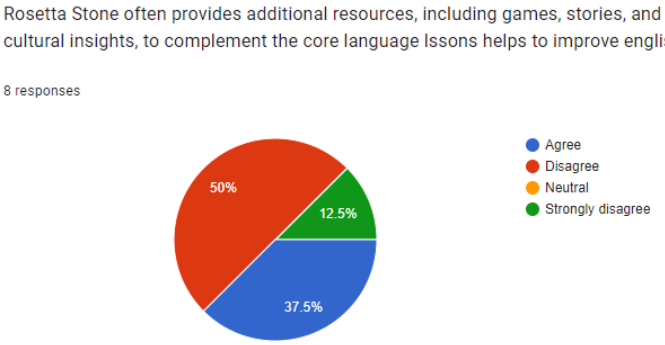


Figure 13: Rosetta Stone Features for Improvement

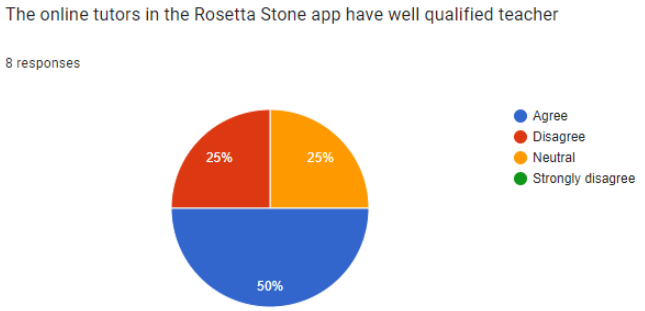


Figure 14: Qualified Teacher Feature

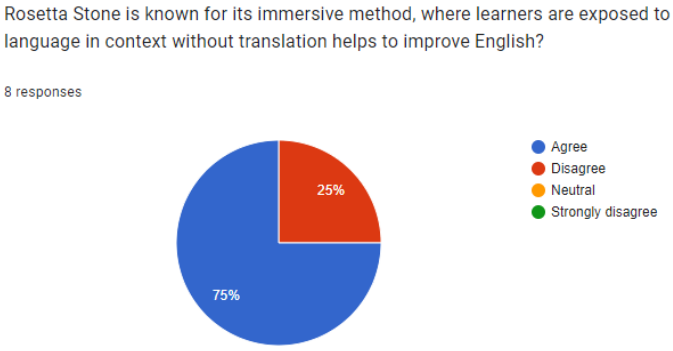


Figure 15: English Improvements

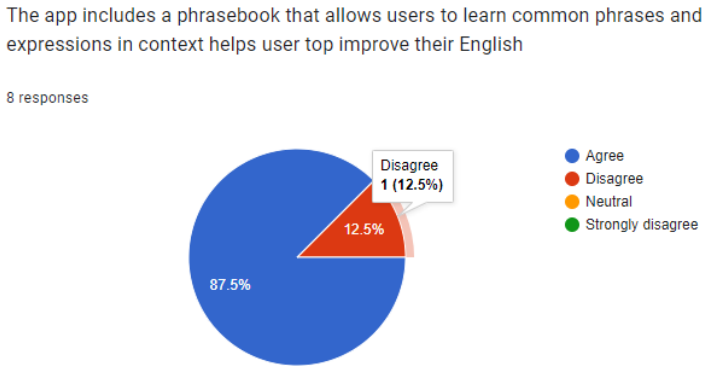


Figure 16: Common Phrases Availability

6. Results and Discussion

The study conducted a survey and asked several questions related to the English app, like Duolingo and Rosetta Stone. The questions include the app interface, app English proficiency level, Tutors associated with the app, app addictive level and many more. And we found that the 100% audience think that the duo lingo approach to attract their audience is perfect because it includes eye eye-catching interface and games. But 70% audience also thinks that the interface is made for expert-level people, thinks that it is only made for the fun of kids and it is not meant for actual learning. The Duolingo app must launch two apps for their audience, where one app is made for kids and the other app is made for expert users, so that the experts do not think that this app is only for fun and not for learning. The tutors associated with the app are also not very qualified to train those people who have some expertise in English, so the suggestion is to hire less competent tutors in the kids app and highly competent people in the app that is made for people having good expertise in the English language. The other app we surveyed on is the roston stone app, which is also used for English learning, but the app also has the same problem that the Duolingo app has, which is that its interface is made only for kids, so the same improvement is required by this app as shown in the results from Figures 17 to 21.

Analysis

The analysis of the results was performed in this way by dividing users into three categories: beginner level, intermediate level and expert level. Figures 17 to 21 represent results for different apps used and as concluding remarks, the apps would be split into different modes.

```
User_Level
Beginner       83
Intermediate   65
Expert         52
Name: count, dtype: int64
App
Duolingo       100
Rosetta Stone  100
Name: count, dtype: int64
          App   User_Level  Interface_Rating  Addictiveness  \
0     Duolingo     Beginner                 9              6
1  Rosetta Stone  Intermediate               8              3
2     Duolingo     Beginner                 7              6
```

3	Duolingo	Intermediate	8	7
4	Duolingo	Expert	9	3

	Learning_Effectiveness	Tutor_Quality	Recommend_Split_App
0	6	High	0
1	6	High	0
2	6	Medium	0
3	8	High	0
4	3	Low	1

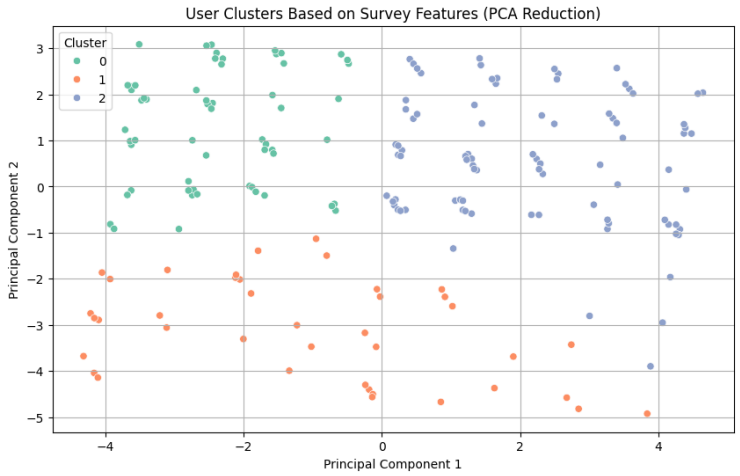


Figure 17: Features of Clusters-Based

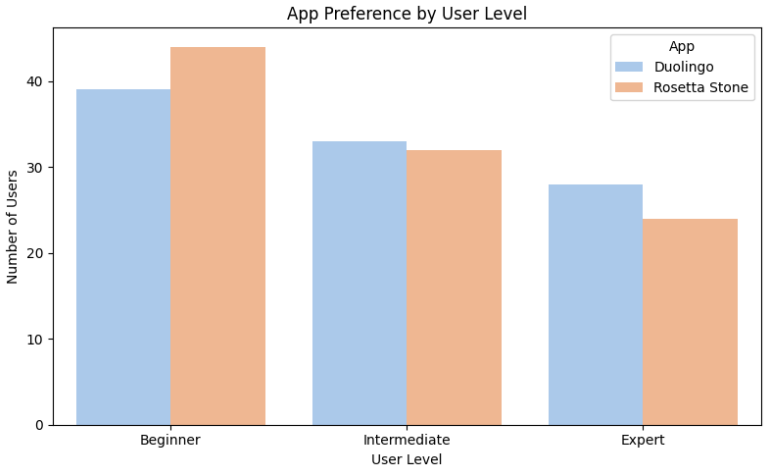


Figure 18: Apps Preferences of User Level

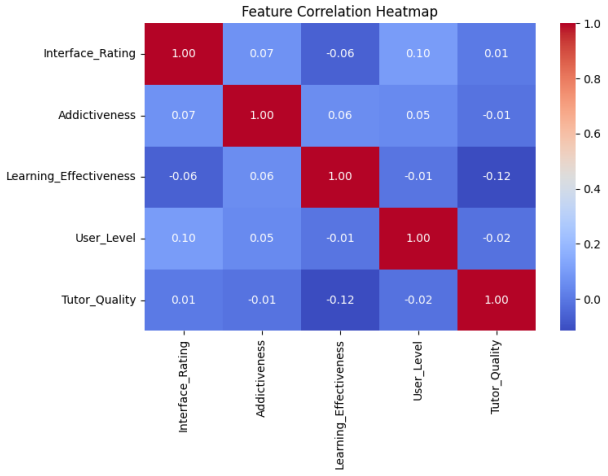


Figure 19: Correlation Heatmap for Features

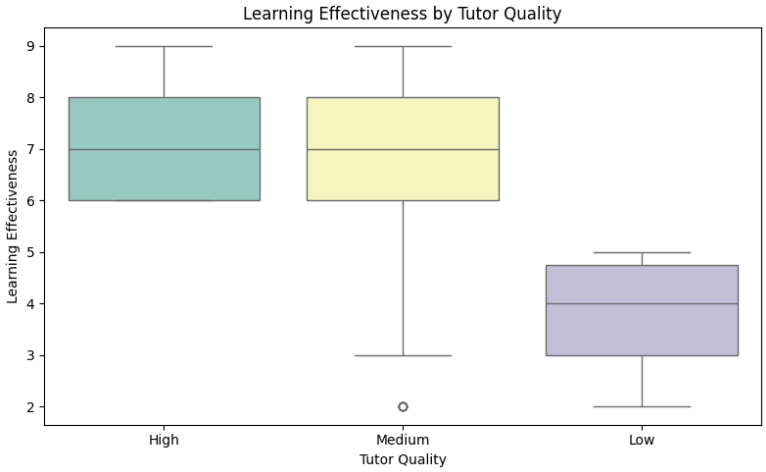


Figure 20: Learning Effectiveness by Tutor Quality

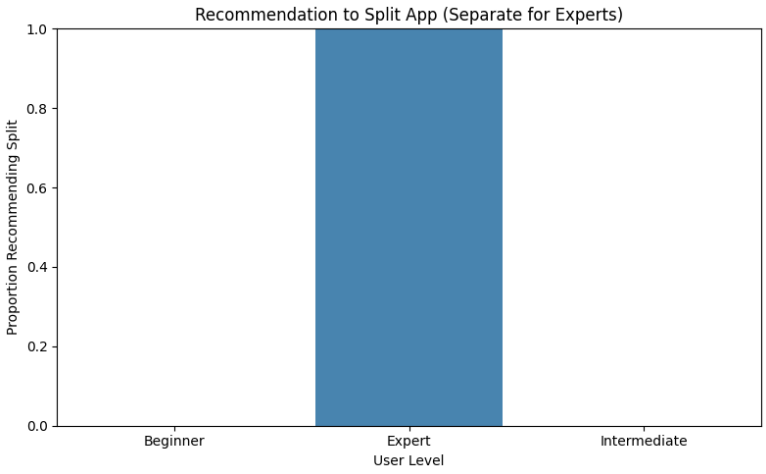


Figure 21: Recommendations for Split Apps

7

. Conclusion

English learning apps offer learners a flexible and accessible means to enhance their language skills. For usability evaluation of English learning apps, we have used the method of surveys. Survey results show that the Duolingo app interface attracts only kids. A simple and attractive interface is required to attract senior users to use the Duolingo app. So, due to this, Duolingo must develop two apps, one for adults and one for kids. The tutors associated with the app are also not very qualified to train those people who have average expertise in English, so the suggestion is to hire less competent tutors in the kid's app and highly competent people in the app that is made for people having good expertise in the English language. The other app we surveyed on is the Rosston app, which is also used for English learning, but the app also has the same problem that the Duolingo app has, which is that its interface is made only for kids, so the same improvement is required for this app.

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