



Duolingo: Personalize Language Acquisition

Debasmita Sen¹ and Ananya Chakraborty²

Assistant Professor, Department of Basic Science and Humanities, Narula institute of Technology, Kolkata, India¹

Student, Department of Computer Science and Engineering, Narula Institute of Technology, Kolkata, India²

Abstract: Due to the evolution of technology, this study focuses on the use of technology in order to promote language learning. Duolingo is one of the modern applications that facilitate acquiring a second language. Duolingo's solution was to create a personalized, fun, and effective experience using machine learning (ML) to understand and challenge users of the product. Duolingo is a language learning app created by Luis Von and Severin Hacker in 2011 with the goal of providing free education to the world. Their aim is readily apparent in their playful and game-like app design, but under the hood ML may be the true innovation.

It is a mixed-method study including observation, assessment, and interview. All data variables were taken through tests. For vocabulary mastery tests, the data was taken in the questionnaires form. The method used was to conduct a system quality test (Software Quality Assurance) of software quality based on the factors and the criteria established. To enable this AI, Duolingo uses deep learning, a subset of AI and machine learning that uses neural networks to mimic the brain's behaviour to quickly analyze data and make intelligent predictions. Duolingo's design largely relies upon a system called "spaced repetition," a technique in which learned information is repeated at regular (usually short) intervals. The purposes of this research is to obtain data and to analyze the effects of the implementation of Duolingo mobile application in English vocabulary. Based on this paper, it drew the following conclusions: Most of the Engineering students, 74.6% in particular, used Duolingo to learn English for specific purposes such as learning vocabulary, improving listening skills, doing some writing tasks, and improving peaking skills for interviews. The students who use Duolingo have awareness in using ICT to help them learn English.

Keywords: Duolingo; Machine Learning; Software Quality Assurance; Neutral networks.

I. INTRODUCTION

Duolingo is one of the modern applications that facilitate acquiring a second language. Since 2011, the Duolingo platform helps those who seek to learn a second language. Duolingo is a free mobile app (there is also a web version) and, statistically, is the most popular in the category of Education in Google Play. This website is different for desktop and mobile versions. Duolingo's solution was to create a personalized, fun, and effective experience using machine learning (ML) to understand and challenge users of the product. In this app, total of 329 lessons supplemented with different activities. Each lesson comprises eight words for the learners. In Duolingo, each chapter consists of sentences that must be translated, these sentences can contain new learned words. After the user answers the question, the user can immediately know whether their answer is right or wrong. Each correct answer will add points and vice versa.

II. MECHANISM OF DUOLINGO APPLICATION

Artificial intelligence is behind Duolingo's mission to make language education accessible and free to everyone. It starts with an AI-driven placement test to determine the starting knowledge of each user for the language they want to study.

Another core feature of the Duolingo app that uses artificial intelligence is known as spaced repetition. This concept delivers personalized language lessons over longer intervals for optimal learning rather than cramming lessons into a short period of time. In August 2022, Duolingo overhauled its user interface and user experience, changing the structure of the courses from a tree-like design where users could choose from a range of lessons after completing previous ones, to a linear progression.

III. THE EFFECTS OF THE IMPLEMENTATION OF DUOLINGO IN ENGLISH VOCABULARY

"Our mission goes beyond language learning. The two biggest problems facing humanity are global warming and economic inequality. We believe that the best way to reduce economic inequality is through education," says Luis von Ahn, CEO of Duolingo. Attracting students' interest in learning the current era is a big challenge for teachers. Nowadays, students began to feel bored with the traditional learning methods. One of the most important components of a conversation in English is that students can manage or know the flow of a conversation topic.

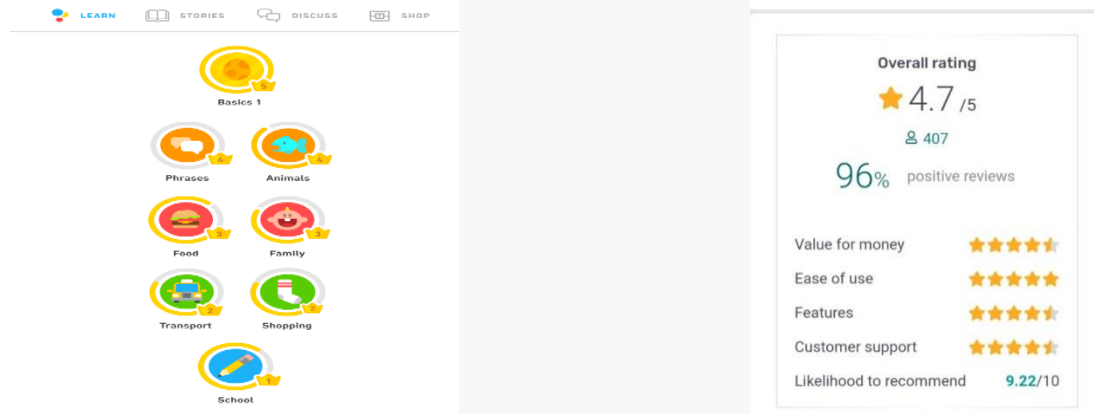


Fig. 1 An Illustration of The Hovering Technique

Fig. 2 The Reviews Of Duolingo Application

The “hovering” approach works no matter where you are in the course. Since Crown Levels give you tougher exercises at higher levels, there’s lots of room to improve, even if you’ve already finished the course. By leveling up, you can get even better at some of the trickiest – but most important – ways to use English language, like listening and English language production (forming words and sentences in the language you’re learning).

Human-Computer Interaction is the area of study that investigates the form of communication between people and computer systems as well as ways of accessing and facilitating this communication. So English is much needed to communicate with machines such as computers.

IV. REVIEWS OF DUOLINGO APPLICATION

This research aims to confirm the hypothesis that Duolingo helps promote acquiring two languages simultaneously for beginners. According to the reviews, Duolingo Application got rated as 4.7 out of 5.

We have collected some of the pros and cons of Duolingo application is given below:

BENEFITS OF DUOLINGO APPLICATION

- Visualization - **Duolingo** doesn’t work with pictures but with a lot of images and symbols which actually have the same effect and help to remember what you have learned.
- Cost – This app is totally free.
- Design - Duolingo's didactics are amazing, totally stimulating through color stimuli, images, voice features, and rewards for learning progress. So it is beneficial for kids.
- Way of Learning - If you are unsure about a word in a translation task you can retrieve their meaning/translation. Grammar rules are explained in mostly every task.
- Attractive - **Duolingo** is set up like a game which attracts the kids more. If you have reached your daily goal trumpets sound. You receive a reminder via email to complete your lessons.

DISADVANTAGES OF DUOLINGO APPLICATION

- It is only for beginners and not meant for Advanced learners –Duolingo is not a miraculous ‘cure-all’ that will enable you to quickly and smoothly gain any language with just a few taps of your device screen. Here everything begins and ends at the basic level.
- Information - There is no information in the beginning about how the whole course works.
- Time Limits - There can be difficulties with meeting the time limits and the notifications can start to be annoying.
- Unnecessary Advertisements - When it comes to the ads, there are some ads that are displayed that make me feel uncomfortable even as an adult.
- Levels – If you once go to the next level, you cannot come back.



V. WHY DUOLINGO IS SO FAMOUS?

Their strapline is “Learn a language for free. Forever.” Duolingo and all their courses are free of charge – definitely a huge bonus point for this application. Duolingo is 100% free. Yes, you don’t need to pay a single penny to learn whatever you’re interested in. Who doesn’t like free stuff?

If you are a person who loses motivation very quickly, Duolingo is definitely the right choice for you.

You can learn various languages at the same time simultaneously. Again, this is difficult to do on other platforms. On Duolingo, you can switch to another language with 2-clicks.

This app is all about gamification. It occupies the learners’ thoughts more quickly and gets them excited about learning. The rush towards finishing the tree and gaining the reward makes you use it more often.

VI. RESULTS AND DISCUSSION OF OUR RESEARCH

Although the number of students involved in this study was not really large, the questionnaire was chosen to get information from students because the questionnaire was “easy to construct and able to collect large amounts of information.

As per our research, most of the Engineering students, 74.6% in particular, used Duolingo to learn English for specific purposes such as learning vocabulary, improving listening skills, doing some writing tasks, and improving speaking skills for interviews.

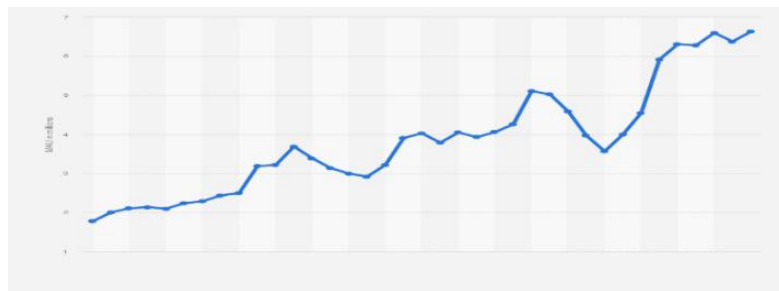


Fig. 3 Engineering Students using Duolingo Application from 2012 - 2022

In this application there is a “tree,” which contains skills, each represented by a node that changes colour from grey (indicating that skill has not been started) to a colour like red, blue or green (you have started the lessons within the skill), to gold (you have mastered all the lessons and vocabulary for that specific skill). The gold colour can “turn” back to another colour if the algorithm of Duolingo establishes that you need to go back and review those nodes because you have forgotten the vocabulary or because enough time has elapsed. Duolingo has not, up to now, published the content of the tree. The only way to find out is to complete the tree yourself.

This approach has allowed the application to achieve enormous scale with over 500 million total college student **users** and around 40 million monthly active users, representing every country in the world.

During the Covid-19 pandemic 52.9% of students who felt that the Duolingo application helped them in learning English, 35.3% of students who felt they did not help in learning English and 11.8% were students who did not feel assisted in learning English by using this Duolingo application.

This app obviously isn’t going to make you fluent in a language, but t’s a very good resource for vocabulary of all sorts. So Engineering students can use this app for learning vocabulary and phrases for their interview process as in the aptitude round everyone has to qualify the Verbal Ability test which comprises of vocabulary, simple English Grammar and phrases.

VII. CONCLUSION

We can conclude by saying that most of the Engineering students uses Duolingo application to learn English for specific purposes such as learning vocabulary, improving listening skills, doing some writing tasks, and improving speaking skills for interviews and also these students who use Duolingo are aware in using ICT to help them learn English. Duolingo can’t replace a “real” language school and especially for beginners I would recommend using Duolingo in combination with a teacher-led language course.



Therefore it is recommended to develop some features in Duolingo for advanced levels as well as some features like going back to the previous levels and downloading the notes as well as some explanations of the solutions must be added answers. Self-study is obviously important in language learning and Duolingo is a useful language application that can provide learners with practical and systematic steps to learn a new language on their own. Duolingo has a sleek design, is user-friendly, and can be used by learners of different ages and cultures. The app teaches English to millions of people for free, although some have criticized the developers' method of making money by getting people to translate texts for free as a by-product of learning a language.

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