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Innovating Education with Technology: An Interdisciplinary Case Study on Duolingo

Introduction

Technology has changed the way we learn, work and interact with one another. With textbooks becoming a bygone of the past, platforms like Duolingo have established themselves as the norms within society, fundamentally transforming how we process and consume new information. This interdisciplinary case study will assess how Duolingo has innovated education by incorporating the core elements of technology and its sub-disciplines. These core elements will include an overview of gamification and the adoption of artificial intelligence within the application.

Background

Firstly, Duolingo is a highly awarded and credited language learning platform available on both Android and iOS as well as on the web. Since its establishment in 2011, the project has a library of over thirty-five learnable languages from around the world with various other branches including ABC Duolingo and Duolingo for School (Ravenscraft, 2019). The team behind the project established their vision to make learning universal, affordable and fun with the main purpose to make learning a language a human right rather than a privilege (Duolingo, n.d.). With standout applications like Duolingo appearing so did a similar trend elsewhere.

In a 2013 study by the Australian Council for Educational Research, it was found that over 99 percent of Australian students had access to a computer with a further 98 percent of students having access to a reliable and active internet connection to the outside world (Australian Students in a Digital World, 2015). With this uptrend in technology adoption, education

institutions have harnessed this prowess in order to enhance student engagement and create an individualised approach to learning, as originally expressed by the team at Duolingo (Kwok, n.d.).

Discussion

In order to help with engagement and increase motivation, Duolingo utilities a well-known strategy called gamification. Gamification implements game mechanics into non-game environments - like a learning environment - with the goal for students and users to interact, share and collaborate (Gamify, n.d.). For example, UX designers have innovated by creating a cohesive and in-depth leveling system that allows a user to rank up when they part take in daily activities or when they complete an assigned learning module in their specified language (Bilham, 2021). Graphic designers and 2D animators have also contributed by designing mascots that react positively with different emotions when the user successfully answers a question correctly or when a major milestone has been achieved (Rachels & Rockinson-Szapkiw, 2018). Game designers and game developers have also collaborated to bring forward mobile game like features. Some of these features include useable items that, for example, freezes the users streak to avoid a loss in consecutive days or a ‘Heart Refill’ that allows the user to regain a heart when they incorrectly answer a question in a lesson (Hong, 2014). Gamification is one of the many strategies that Duolingo uses to keep a user’s attention, artificial intelligence goes beyond those strategies by providing a personalised scheduled experience.

Utilising sub-disciplines, Duolingo has used innovating tools to create a proficient and effective learning environment. Cooperating with software engineers and UX designers, the platform has developed an artificial intelligence that personalises a user’s experiences in order to reach their highest potential. For example, on initial sign-up the user will have to part

take in an AI driven placement test. On the basis of the user's results, the AI will determine a syllabus that best suits the user's prior knowledge and understanding of the language they have chosen (Marr, 2020). Additionally, the platform's AI-powered chatbots allows a seamless automated text-based conservation to create a life-like interaction that would otherwise be done face-to-face (Sreedevi, 2020). Software engineers have contributed by training the artificial intelligence with large code-based data sets in order for the chat bots to properly construct sentences and provide feedback to the end user (Built In, n.d.). UX designers and UI designers help by creating an interactive and user-friendly chat box that allows communication between the artificial intelligence and the user.

Conclusion

The team behind Duolingo have effectively communicated how they have used the core components of technology to help innovate education. Evidently, the platform uses gamification to improve engagement amongst users while also using Artificial Intelligence to create a personalised experience that caters to needs and wants of the user. However, there are various aspects in which Duolingo can improve their platform further. The platform is largely theory-based, in order to improve a user's conversation skill in a chosen language the team could potentially implement one-on-one tutoring in the form of a video call. Additionally, software engineers could train the in-house AI to hold voice conversation as a cost-effective measure (McGowan, n.d.). If this does come to reality, shareholders and government agencies like the FCC would have to be consulted due to the ethical nature of data tracking and artificial intelligence. Finally, creating an open forum within the application could promote collaboration and further learning amongst users. Within this forum users could discuss about topics of their chosen language and share insights into culture, norms and etiquettes (Moran, 2019).

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