EFL Students' Perceptions on Duolingo: How AI can Eliminate Socioeconomic Discrepancies

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Abstract

Different educational achievements between students from high socioeconomic status and those from lower socioeconomic status in universities are said to be caused by unequal access to learning resources. This research aimed at investigating students' perspectives on the use of Duolingo in EFL learning to eliminate socioeconomic discrepancies in the university. This research used a descriptive qualitative design. Interviews were used to gather data from one male and two female higher education students majoring in the English Language Education program. This research shows two main findings. First, students have positive attitudes and enjoyable experiences in using Duolingo contributed by its fun, easy, accessible, and fun nature. Second, Duolingo, offering free charge for all users, can eliminate socioeconomic discrepancies among students in the university because it can be accessed by students from any socioeconomic condition. It implies that Duolingo as an AI tool can be used by both educators and students around the world as an accessible language teaching and learning resource. Therefore, there is a need to develop students', educators', and parents' awareness of the utilization of Duolingo as a solution for the limited access to learning resources due to socioeconomic barriers.

Keywords: *Duolingo, EFL Learning, socioeconomic discrepancies*

INTRODUCTION

In universities, students from various family backgrounds pursue their education. Those students are raised with their unique family culture which is partly formed by their parents' education and prosperity. Parents' educational background and socioeconomic status (SES) also reflect their views on how they raise and educate their children. In many countries, SES is often measured with three aspects, including parents' income; level of education; and jobs (Chmielewski; Kim et al.; Tan et al. as cited in Harwell & Zhao, 2021). In other words, socioeconomic status can be one of the determining factors of students' academic success.

The connection between academic success and socioeconomic status is not a recent issue in research. Some studies were done to know the effects of family backgrounds, including socioeconomic status, on students' educational achievement (Destin, et al., 2019; Harwell & Zhao, 2021; Liu, et al., 2020; Poon, 2020; Yeung, et al., 2022; Zhang, et al., 2021; Butler & Le, 2018).

Students from high SES show better learning performance than those from low SES. The most influential factor determining students' performance at school is SES (Boocock as cited in Harwell & Zhao, 2021). Students from high SES also have a better learning mindset, persistence, and motivation (Yeung, et al., 2022; Destin, et al., 2019).

Students' different SES also show influences on parental factors in encouraging students' academic attainment. Students from middle SES show better academic attainment compared to those from low SES due to different parental expectations, parental engagement inside and outside the classrooms, academic interactions, and students' involvement (Poon, 2020; Zhang, et al., 2021).

Despite its effect on students' achievement, socioeconomic status also has a significant influence on other aspects of language learning. Students' English ability is strongly correlated to parenting styles and parental attitudes and hopes (Butler & Le, 2018). In addition, regarding reading skills, SES becomes a significant predictor of students' reading achievement (Yeung, et al., 2022). Students from high SES demonstrate higher reading interest and scores in STEM subjects (Le et al., 2019). The reasons are rich families, usually possessing high educational levels, also concern about their children learning resources and they can afford books and other learning resources to support their children learning (Le et al., 2019).

Nowadays, with advancements in technology that have simplified the process of learning English, there is no longer a barrier to equal opportunities for all learners to learn English. There are a variety of learning applications currently in use in order to help learners

in learning English. Some of the applications provide features that are paid, but some others are free.

The idea of encouraging language learning through technology as artificial intelligence (AI) has long been reported in the literature on second and foreign language learning. Artificial intelligence is designed to perform activities and learn like how humans do (Syam & Sharma, 2018). When teachers bring this idea into an educational setting, it can help both students and teachers in the teaching and learning process. AI-based education has assisted students to acquire skills, learn collaboratively, and access the research environment (Kuleto, et al., 2021) and in recent years has given favorable impacts on EFL teaching (Gric-coast et al.; Hamuddin & Dahler as cited in Junaidi, et al., 2020).

Thus, the use of artificial intelligence in EFL teaching and learning creates opportunities for students to learn English easily and interestingly. One of the most popular AI applications to learn English is Duolingo. Duolingo is a free AI-based language learning application. Duolingo offers a learning environment that is without charge and creates no language difficulties (Duolingo, 2022).

Some previous studies were carried out on similar topics. First, Anangga & Ardiyani (2021) carried out research on an autonomous learning model using Duolingo to promote students' autonomous learning for improving Senior High School students' listening skills in the German language. The study shows that the autonomous learning model using Duolingo can be used by teachers to develop students' vocabulary and improve students' listening skills in the German language. Second, Ajisoko (2020) studied the use of Duolingo to improve university students' vocabulary. The result of the study indicates that Duolingo can improve students' vocabulary due to its fun, easy and motivating nature. Third, Sukma (2019) conducted a correlative study on SES and EFL students' learning motivation. The result of the study indicates that SES correlates positively with students' motivation in learning. Finally, Lurie, et al. (2021) investigated how cognitive stimulation links SES to children's language development. The finding of the study suggests that SES is strongly correlated with cognitive stimulation and language test results. SES and children's language are associated through cognitive stimulation.

This study has some differences from the previous studies. The first previous study focused on the use of autonomous learning using Duolingo to improve students' listening skills in the German language, while this study investigated the use of Duolingo to eliminate socioeconomic discrepancies in EFL learning. The second previous study was concerned with the use of Duolingo to improve higher education students' vocabulary, whereas this study dealt

with how Duolingo could eliminate socioeconomic discrepancies at the university. The third previous study studied how SES correlated with motivation. However, this study focused on the elimination of socioeconomic discrepancies among EFL university students. The last previous study addressed how cognitive stimulation linked SES to children's language, but this study investigated how Duolingo could eliminate socioeconomic discrepancies among EFL adult learners in the university.

This research intended to explore students' perspectives on the use of Duolingo for EFL learning to eliminate socioeconomic discrepancies. For this purpose, there were two research questions formulated:

1. What were students' perspectives and experiences in using Duolingo to learn English?
2. How could Duolingo eliminate socioeconomic discrepancies among EFL students in the university?.

LITERATURE REVIEW

This part presents the literature supporting the study. This is mainly divided into three sub-sections, namely the definitions of AI, the implementation of Duolingo in the EFL context, and the effects of socioeconomic discrepancies on EFL students' learning.

The Definitions of AI

Artificial Intelligence is a computer system that is capable of doing activities that can be done by humans (Nabiyev as cited in Goksel & Bozkurt, 2019). Webber and Nilsson (2014) define AI as a program designed using comprehensive algorithms that mimics human abilities. According to Russell & Norvig (2016), AI has four main abilities possessed by humans. They include the abilities to think like humans, to think reasonably, to act like humans, and to act reasonably. In sum, artificial intelligence (AI) is a computerized system enabling machines to reason like humans, respond to various inputs, and execute activities generally done by humans. AI is pervasively used in various sectors, including education.

The Implementation of Duolingo in the EFL Context

Duolingo is one of AI-based applications used in education, especially language learning. According to Kusumadewi & Widyastuti (2018), Duolingo is an application that helps learners study languages for free. Luis Von Ahn and Severin Hacker developed this application

and it was later released in 2011. The application provides 68 language lessons in 23 languages and 22 supplementary courses (Kusumadewi & Widyastuti, 2018). Having 'more than 120 million' members around the world, Duolingo has turned out to be one of the most well-known tools for learning languages that concerns how learners acquire 'grammar and vocabulary' in varied topics (Botero et al.; Cerone & Zhexenbayeva as cited in Mahbub, et al., 2020). Additionally, Duolingo can be a personal language instructor that offers customized teaching and makes learners acquire the language by engaging them in 'game-like activities' (Duolingo as cited in Teske, 2017). To sum up, Duolingo is a free-tuition application which assists learners to acquire languages in a fun and personalized manner.

Duolingo as an application offering free access for learners has eased learners from various socioeconomic status to learn languages. To improve EFL students' learning, there must be innovative, economical, accessible alternatives. The teaching of a foreign language can be improved by providing innovative, inexpensive, and resource-conserving strategies for students (Mahbub, et al. 2020). Gamification can meet this need by assisting EFL teachers to create, implement and design instructional materials that are useful and cost-effective (Rodrigues et al.; Toda et al. as cited in Mahbub et al., 2020). It is in line with the slogan of Duolingo which is "Free language education for the world" (Munday, 2016, p. 85). One of the creators of Duolingo, Von Ahn, claims that the issue challenged by 1.2 billion language learners around the world is the lack of quality and expensive charges of language lessons (O'Connor, 2014). Thus, Duolingo has made language learning more accessible for all learners, including those coming from low socioeconomic status. In other words, Duolingo can be used to eliminate socioeconomic discrepancies.

The Effects of Socioeconomic Discrepancies on EFL Students' Learning

Socioeconomic discrepancies occur due to differences in socioeconomic status. Socioeconomic status (SES) is an indicator of a person's overall social and economic condition and is often significantly linked with improved health (Baker, 2014). Sociologists use the word 'socio-economic status (SES)' to describe differences in income, authority, and reputation and they claim that SES and educational success are closely associated (Woolfolk, et al. as cited in Hol & Yavuz, 2017). According to American Psychological Association (APA) (2022), the term SES refers to a person's or a team's place on the socioeconomic measure which is based on some aspects including wealth, educational levels and types, career types and reputation, residence, and ethnicity or religion. In other words, socioeconomic status (SES) is one's social

and economic conditions indicated by the levels of income, authority, profession, and other socioeconomic factors which can affect one's success or failure.

In terms of education, socioeconomic discrepancies affect students' access to various learning resources and later affect their learning success or failure. Students' willingness and motivation in learning will determine the effectiveness of the teaching and learning process and based on attribution theory, students' failure or success in doing assignments will give various explanations for the outcomes (Hol & Yavuz, 2017) which may be a reflection of students' hopes, ideals, attitudes, and beliefs on their abilities (Weiner, 2001). According to Conger et al. (as cited in Hol & Yavuz, 2017), students with high SES show better academic performance and remain in school longer than those coming from low SES. Bogdon (2010) argues that increasing socioeconomic discrepancies occur due to more access and exposure that high-socioeconomic students have to various kinds of educational institutions and additional activities. Thus, socioeconomic discrepancies affect students' learning performance because only students from high SES who have the privilege to access more educational resources. This research referred to the SES theories from Weiner (2001) and Bogdon (2010).

In foreign language learning, socioeconomic discrepancies also have profound impacts on students' learning performance. Socioeconomic status can influence students' academic success and learning motivation (Fan, 2011). In line with that, Nikolov (2009) points out that there is a strong relationship between parents' educational background and students' academic performance in learning a language. A powerful proof is also given by The PISA Report in 2003, stating that students from higher SES families show better performance in a proficiency test (Hol & Yavuz, 2017).

METHOD

This research used a descriptive qualitative research design. Descriptive qualitative research produces data describing people, topics, and places of incidents or feelings from personal accounts (Doyle et al., 2020). The participants of this study were three EFL university students majoring in English Education. To collect the data, this study used semi-structured interviews. The interviews were conducted to look into students' perspectives of Duolingo as an artificial intelligence application to eliminate socioeconomic discrepancies in the university. The interview consisted of five questions. The questions constructed were validated by a lecturer who has the same field as this research. To get the data, the researchers conducted several steps. First, the researchers conducted online interviews via WhatsApp calls for about twenty minutes for each participant. Then the researchers asked the questions to the participants. During the

interviews, the researchers used recordings to record what participants said. In this research, the researchers analyzed the data by doing some steps. First, the researchers transcribed the interviews. After that, the researchers identified all data obtained through interviews based on information provided by the participants. The following step was reading the data to gain information. The next step was coding the description of the data by analyzing the data information from the transcription that categorized it into several facts by labeling the data on each research instrument. Next, the researchers interpreted the findings from the research findings and discussion. The last step was concluding the whole research.

FINDINGS AND DISCUSSION

This section conveys the students' perspectives on the use of the Duolingo application to eliminate socioeconomic discrepancies in the university. The data were obtained from interviews involving 3 participants regarded as S1 (Student 1), S2 (Student 2), and S3 (Student 3). To get the participants' perspectives on how Duolingo eliminates socioeconomic discrepancies in the university, they were asked to answer five questions. The results are as follows.

Students' perspectives and experiences in using Duolingo

Three questions were used to get students' opinions and experiences on the use of Duolingo to eliminate socioeconomic discrepancies in the university. The questions include students' reasons for using Duolingo, students' experiences in using Duolingo for learning English, and students' perspectives on the benefits of Duolingo.

Students' reasons for using Duolingo

From the interviews, it is found that students used Duolingo to learn English for various reasons. The results of the interview are as follows:

"I choose Duolingo as an English learning tool because it is easy to use and accessible. When I use the application, there are some stages and it is also provided for beginner, intermediate, and advanced levels" (Student 1, personal communication, September 4th, 2021).

"I choose this application because Duolingo application is suitable for learning English" (Student 2, personal communication, September 4th, 2021).

"*The reason why I use Duolingo application is that it is free and quite easy to use. Secondly, it often passes on Twitter threads and Quora and many people suggest using Duolingo. Then I*

feel interested and I try to install and learn to use Duolingo. This application is really cool. It provides you with a step-by-step guide to learning English and also has a speaking and reading practice feature. I think it is suitable for beginners and those who have not been very good at mastering English yet" (Student 3, personal communication, September 4th, 2021).

The results above indicate that students' reasons to choose Duolingo as an English learning tool are due to its ease, accessibility, and suitability. This is in line with Kusumadewi & Widyastuti (2018) who argue that the idea brought by Duolingo is to make learning fun and to be accessed easily by all users. As Amalia (2019) emphasizes, the gamification offered by Duolingo helps students learn and enjoy the learning process more. Vohn Ahn (as cited in Tapper, 2022) claims that Duolingo was developed with the intention to make it possible for all people to access language learning. According to Teske (2017), various features of Duolingo fit teachers and students. To develop students' communicative skills nowadays, Duolingo can be the best additional language learning application for students to practice using the new language authentically.

Students' experiences in using Duolingo

Students also shared their experiences when learning English using Duolingo. The results can be seen in the following interview transcripts.

"It is really fun and interesting. I can improve my speaking and listening skills and also enrich my grammar and vocabulary. I really enjoy it" (Student 1, personal communication, September 4th, 2021).

"It is very useful and interesting, triggers adrenaline, and makes it easier for us to learn English, especially the basic English such as grammar, vocabulary, and pronunciation" (Student 2, personal communication, September 4th, 2021).

"My experience using the Duolingo app is like playing video games. I do not feel bored and overwhelmed. Perhaps because Duolingo is designed attractively because it has a good display with full animation that can attract our interest" (Student 3, personal communication, September 4th, 2021).

Those statements above show that students have good experiences when using Duolingo. They find Duolingo fun due to its various interesting features. Besides that,

Duolingo can also improve students' language skills and language components. Duolingo aims to provide free-tuition, enjoyable, and personalized learning for learners around the world through its 'translation method'. In addition, Duolingo significantly affects students' vocabulary mastery (Amalia, 2019; Kusumadewi & Widyastuti, 2018). Hafifah (2021) adds that Duolingo has a substantial improvement in students' speaking skills and enhances students' four skills in language thoroughly (Alfuhaid, 2021).

Students' perspectives on the benefits of Duolingo

The next interview question is about the benefits of Duolingo. Students mentioned some benefits of Duolingo as follows.

"In my opinion, it is effective because Duolingo is an application for increasing our vocabulary, grammar, and even speaking. It is effective for us to learn English as a foreign language" (Student 1, personal communication, September 4th, 2021).

"In my opinion, this is not very effective because Duolingo application focuses more on leveling up each game and does not focus more on learning, but this app might help EFL learners" (Student 2, personal communication, September 4th, 2021).

"In my opinion, this is effective. With the pre-test feature in Duolingo to determine our level of English skills before using this application, we can learn based on our initial abilities and then level up following our progress and learning outcomes. However, it depends on the students themselves, in my opinion, it is not enough to rely on the application, but it must be accompanied by strategies and motivation from the lesson" (Student 3, personal communication, September 4th, 2021).

From the results above, the first and third interviewees have the same perspectives that Duolingo application is effective in assisting EFL learning. This application enables students to learn based on their English proficiency level. Duolingo also helps students enhance their vocabulary, grammar, and speaking skills. As it has been mentioned previously, Duolingo plays an important role in enhancing students' vocabulary and language skills (Alfuhaid, 2021; Amalia, 2019; Hafifah, 2021; Kusumadewi & Widyastuti, 2018). It also assists students in learning English based on their level of proficiency (Teske, 2017) and it scaffolds students to improve their grammatical ability through lessons and exercises using 'implicit and explicit teaching' (Onstwedder and Harb, 2020). In contrast, based on what Student 2 said, Duolingo

still can help students in EFL learning, but this application is not very effective because the focus is more on leveling up the game rather than learning the language. It contradicts the idea that the gamification feature in Duolingo is designed to motivate students to acquire a new language in an interesting, comprehensible, and fun manner (Kusumadewi & Widyastuti, 2018; Munday, 2016; Teske, 2017). In sum, Duolingo is beneficial to enhance EFL students' learning.

Overall, the results of the interview indicate that students have positive attitudes to Duolingo and have good experiences learning with it. Students' positive attitudes and good experiences on Duolingo are contributed by the benefits of Duolingo itself which provide a fun, easy, accessible, and fun learning platform for EFL students.

The use of Duolingo to eliminate socioeconomic discrepancies in the university

After analyzing the results of the students' perspectives and learning experiences in using Duolingo, this section focuses on the participants' perspectives on the use of Duolingo to eliminate students' socioeconomic discrepancies in English learning. There are two questions formulated. The first question is about students' opinions of free and paid English language learning applications. The second question tries to find out how Duolingo can eliminate socioeconomic discrepancies in the university.

Students' opinions on free and paid English learning applications

The participants were also asked for their opinion on free and paid language learning applications. It includes the differences and effectiveness of free and paid English learning applications.

"*There are differences between paid and free applications. When we use a paid application, the application has more complete features than the free application and I think a paid application is more effective*" (Student 1, personal communication, September 4th, 2021).

"*They have many differences. Paid apps may have more features than the free ones. The features of paid applications are more complete and effective than are the features in free applications. In fact, the effectiveness of application can be seen from the goal that we want to achieve in learning. If we really want to learn something, it is better to pay for the features to make us more comfortable to learn. In my opinion, paid applications are more effective because if there is a price, there is quality*" (Student 2, personal communication, September 4th, 2021).

"I think the comparison between those applications is quite clear. Generally paid applications such as Elsa Speak, CAKE, and Lingochamp provide much more complete features and are quite promising to help learn English. Thus, regarding the effectiveness of free and paid English learning applications, it all depends on the function of the application and our needs. If the paid application is much more complete, not too expensive, and suitable to our needs, I think I prefer the free application to the paid one" (Student 3, personal communication, September 4th, 2021).

It can be summarized from the data above that free and paid English learning applications are different in terms of the access available to the features. All of the students shared a common idea that paid English learning applications are more effective for learning compared to the free ones. However, based on the opinion of Student 3, it can be seen that the effectiveness of an application can be seen from its function and the way it meets the users' needs. Thus, if free English learning applications are available and can provide features that are useful and can meet students' needs, students will prefer to use the free applications. Duolingo claims that it designs 'the most effective' platform which suits the needs of every student (Teske, 2017).

How Duolingo can eliminate socioeconomic discrepancies in universities

This research tried to capture students' perspectives on the use of Duolingo to eliminate socioeconomic discrepancies in the university. Here are the students' responses.

"It is very useful for all students because the application can be used for all students from all socioeconomic status" (Student 1, personal communication, September 4th, 2021).

"Good, so it can be very helpful for all people, especially for the lower and middle-class socioeconomic levels. This means that the application can be reached by people who have low, medium, or high socioeconomic conditions. There is no need for (private) tutoring or using a paid application to learn English. If it is free, why not? So just take its advantages" (Student 2, personal communication, September 4th, 2021).

"I think Duolingo can provide opportunities for all students regardless of their socioeconomic background because there are no features that users have to pay for. All students with different socioeconomic backgrounds can study using Duolingo. Besides, this application is quite easy to use for EFL learners" (Student 3, personal communication, September 4th, 2021).

The results of the interviews show that all students stated that free features given by Duolingo make it accessible for students from any socioeconomic level. They can study the language easily without buying some features of the application. As previously mentioned, the original idea of Duolingo development was to bring equality in language learning for all learners around the world (Von Ahn as cited in Tapper, 2022) and it is regarded as one of the most user-friendly, helpful, and reachable language learning application (Kusumadewi & Widyastuti, 2018). Another claim made by Duolingo is besides offering free access for teachers, it also provides premium features that can be accessed for free by all students no matter what their socioeconomic condition is (Pothireddy, 2022).

CONCLUSION

This study attempted to answer two research questions regarding students' perspectives and experiences in using Duolingo to learn English and the possibility of eliminating socioeconomic discrepancies among EFL students in the university by using Duolingo. The results of the analysis above indicate that the students have studied English using Duolingo and most of them gave positive responses regarding the use of Duolingo to support their English learning because Duolingo application can be useful in supporting and improving EFL learning process. The features of Duolingo are beneficial for EFL students. In addition, Duolingo is an application which enables users to use its features to learn languages at no charge. Lastly, Duolingo can eliminate socioeconomic discrepancies among students in the university so that all students from various socioeconomic backgrounds can have the same chances to learn English using Duolingo. This research implies that Duolingo can be one of the teaching and learning alternatives both for teachers and students. This research only focuses on how AI can eliminate socioeconomic discrepancies in the university. Therefore, future research is suggested to find out the voices of teachers or students in other educational settings, e.g. schools.

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