

Research Article

The Use of Duolingo Application to Develop High School Students' Self-Reliance

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Abstract.

Most English pupils have difficulty in learning English, especially when it comes to speaking on their own. Those who want to speak well and fluently must develop a willingness to learn independently, since learning English in class is insufficient. Due to this, it is necessary to develop students' self-reliance to learn. There are three concepts of self-reliance: i. being responsible, ii. being disciplined, and iii. being confident. Having awareness that students' ability to learn independently will have an impact on how well their self-reliance ability develops. The Duolingo application has the potential to grow students' self-reliance awareness because this application provides direct feedback on their progress. So far, not much research has investigated this. Therefore, this research aimed to investigate the development of students' self-reliance of learning to speak English before and after using Duolingo, and described how the students grow self-reliance in learning to speak English. The research was conducted on 70 high school students in Semarang City. Using Concurrent Nested Design, this quantitative research focused on measuring changes in the level of the students' independent learning in speaking before and after using Duolingo. Qualitative data, such as interview results, were used to complete the picture on how students used the application to improve their self-reliance. The result showed that the mean pre-test score was 79.43, which increased to 91.81 in the post-test, showing a significant improvement of 12.38 points. This indicated the intervention's effectiveness. The standard deviation of the pre-test is 6.606, and the post-test is 5.483. Moreover, the average N-gain score is 0.64 and a mean percentage improvement of 64%. While most participants improved significantly, there was notable variation in the extent of improvement. The qualitative analysis underscores the diverse ways participants perceive and benefit from using Duolingo, highlighting its effectiveness in self-reliance to speak English.

Keywords: Duolingo, application, high school, self-reliance

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1. Introduction

Encouraging pupils to acquire English is essential for their language growth and competency. Conventional teaching approaches frequently fail to properly engage pupils, which results in poor motivation and less than ideal learning outcomes. Gamification tools have surfaced as a possible way to improve student engagement and motivation in recent years. Furthermore, the rapid development of communication technology, especially mobile phones, affects how students use technology to learn English. According to [1], the quick advancement of technology has led to innovative adjustments in both societal expectations and our way of life. Today's teacher education institutes attempt to reorganize their educational programs and classroom spaces in recognition of the impact that new technologies have on the business and daily life.

ICTs have changed how people operate today and are also changing educational systems, according to [2]. Therefore, if schools continue to teach students using outdated technology and skills, they may not be employable in the modern world. This is enough justification for ICTs to gain attention and recognition on a worldwide scale. The current gamification tool landscape comprises a wide range of platforms, software components, and apps available. Certain platforms provide ready-made solutions tailored to specific industries or use cases, while others provide personalized frameworks for creating gamified experiences. Additionally, advancements in augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) are opening up new possibilities for flexible and immersive gamification experiences.

Numerous mobile applications exist that can be utilized to enhance one's ability to speak English. Duolingo is among the intriguing applications. Free online classes are offered by the language-learning website Duolingo, which may be accessed online and through mobile apps. Previous studies have shown how effective Duolingo is at teaching reading comprehension and receptive listening abilities [3]. The ability of Duolingo to leverage gamification technologies to increase engagement and modify behaviour is one of the main elements propelling the company's growth. Gamification uses components like points, badges, leaderboards, levels, challenges, and incentives to promote social interaction and a sense of progress. It enhances motivation, productivity, and learning outcomes by making tasks or activities more enjoyable, relevant, and immersive.

Self-reliance is being true to self and is lived by being responsible, disciplined and confident while staying connected to one's cultural roots. The three concepts of self-reliance are (a) being responsible, (b) being disciplined, and (c) being confident [4].

In conclusion, based on the problem's previously mentioned history, there are two fundamental issues. Even though Indonesia will require this generation—one that is disciplined, creative, independent, responsible, and deeply committed—student self-reliance in learning English as a foreign language remains low. Research on the use of programs such as Duolingo has mostly focused on language learning in English. Not much research has looked into how using Duolingo might help students become self-reliance in their English language learning. Therefore, the current research aimed at investigating the development of students' self-reliance of learning to speak English before and after using Duolingo Application and describing how the students grow self-reliance in learning to speak English.

2. Method

Concurrent Nested Design was the research design employed in this research. According to [5], there are three structures for quantitative methods: survey, correlation, and experimental. To gauge changes in students' understanding of their ability to learn English on their self-reliance, the researchers employed experimental study. According to [6] experimental design is separated into three, namely pre-experimental design, actual experiments, and pseudo-experiments. Subsequently, this study used a pre-experimental design with a single group pre- and post-test. Seventy high school students in Semarang City participated in the survey at random. Changes in the development before and after using the Duolingo application are measured primarily using quantitative data. In order to complete the research, qualitative data, such as interview results [7], were used to perceive high school students' self-reliance in using Duolingo application [8]. At the data analysis stage, the researchers tested the extent of application use of Duolingo in developing high school students' self-reliance to speak English using SPSS Software.

3. Result and Discussion

In this section, the researchers show the collected data and the quantitative analysis performed on those data relevant to the issue the development of students' self-reliance

of learning to speak English before and after using Duolingo Application and describing how the students grow self-reliance in learning to speak English.

3.1. Students' self-reliance development to speak English before and after using Duolingo application

Based on their performance on a pre-test, the data shows the grading distribution for a cohort of seventy students. Six different score ranges are used to categorize the data, which show a distinct trend in student achievement. Just one student, or 1.43% of the total, received a score in the highest category, "Excellent" (scores between 96 and 100). This suggests that although extraordinary performances are uncommon, they do occur within the group. There was a little increase in the "Very Good" category (scores between 86 and 95), with seven students (10% of the cohort) showing strong understanding and capability. The largest group falls within the "Good" range (scores between 76 and 85), where 38 students, or 54.28%, scored within this bracket. This suggests that more than half of the students performed solidly, indicating a commendable level of knowledge and skills. Conversely, the "Fairly Good" category (scores between 66 and 75) contains 24 students, representing 34.29% of the total. This indicates a noticeable drop in performance but still reflects a majority of students performing adequately.

Notably, there were no students in the "Fairly Poor" (scores between 56 and 65) and "Poor" (scores between 0 and 55) categories, suggesting that all students managed to achieve a minimum level of understanding, with no one falling below a score of 66.

After the intervention, the majority moved to the "Very Good" and "Excellent" ranges. The data indicates the intervention was highly effective, with 97.13% of participants scoring in the "Very Good" or "Excellent" ranges post-intervention compared to only 11.43% pre-intervention. The intervention had a significant positive impact on the participant's performance, as evidenced by the substantial increase in higher category scores and the overall improvement in the distribution of scores from pre-test to post-test. The majority of participants moved from average or below-average performance levels to above-average or excellent levels, demonstrating the effectiveness of the intervention. After the treatment using the Duolingo application, there seems to be an improvement in the high school students' self-reliance on their speaking. Most students could speak with more vocabularies than before.

The data indicates that participants generally experienced substantial improvements as a result of the intervention, with an average N-gain score of around 0.64 and a

TABLE 1: The Frequency and Percentage of the Score of Students' Speaking Skill Using Duolingo Application.

No	Score	Category	F (Pre-Test)	% (Pre-Test)	F (Post-Test)	% (Post-Test)
1	96-100	Excellent	1	1.43%	25	35.71%
2	86-95	Very Good	7	10%	43	61.42%
3	76-85	Good	38	54.28%	2	2.86%
4	66-75	Fairly Good	24	34.29%	0	0%
5	56-65	Fairly	0	0%	0	0%
6	0-55	Poor	0	0%	0	0%
Total			70		70	

TABLE 2: The Students' Speaking Skill Using Duolingo Application Mean and Standard Deviation score.

st	Mean	N	Std. Deviation
Pre-Test	79.43	70	6.606
Post-Test	91.81	70	5.483

TABLE 3: The score of N-gain score and N-gain percent.

Metric	N	Minimum	Maximum	Mean	Std. Deviation
N-gain score	70	0.28	0.92	0.6401	0.17188
N-gain percent	70	28.00	91.67	64.01	17.18
Valid N (listwise)	70				

corresponding mean percentage improvement of about 64%. The range and standard deviations indicate that while most participants improved significantly, there was still a notable variation in the extent of improvement. [9] states that the descriptive analysis of N-gain scores and percentages highlights the effectiveness of the intervention, showing substantial improvements on average. The variability in improvements suggests that while the intervention was broadly effective, individual factors might have influenced the degree of benefit received by participants. Therefore, there is a significant development of the use of Duolingo Application to develop high school students' self-reliance.

3.2. High School Students' perceptions on the use of Duolingo application to develop self-reliance

The aim of this qualitative study is to investigate how using Duolingo can help high school students become more self-reliance learners of English. According to [10] this

application may aid students in their learning process, which in turn aids in their academic success. Analysis of the interview data showed that there were a number of problems with students' of learning English, particularly with improving their self-reliance in speaking.

Here are some respondents who gave their perceptions about Duolingo application to develop the high school students' self-reliance:

R 1 stated that:

"With Duolingo I am sure I can learn English with my strategy. Duolingo for me is a place to improve my English, because I have received a basic English education since I was little. But I think for new Duolingo users who intend to learn a new language from the beginning, I'm sure Duolingo can be very helpful."

R 2 stated:

"Practical exercise methods and flexible time ranges can be very helpful when you are learning English, especially speaking because in the Duolingo application, there are also speaking tests in several sections."

R 3 stated:

"Duolingo is like a game that we can play to learn English. We can learn to speak English through this application, and every time we speak, Duolingo will provide immediate feedback. This helps us feel more enthusiastic and engaged in learning. Apart from that, Duolingo also provides the correct words and phrases, so that we can speak better and be easily understood by others."

R 4 stated:

"Duolingo made me pay more attention to how important it is to learn English, because I thought I was capable enough in learning English but it wasn't the best so I intend to learn more in the future."

R 5 stated:

"When playing Duolingo in the speaking section some words are not detected by the application. From there I realized that my accents and speaking were still lacking and needed to be improved."

R 6 stated:

"Duolingo teaches English from the basics, so it is quite helpful to be able to speak English even if your skills are still at a low level. Listening also helps to speak because people who practice more would know the correct pronunciation."

R 7 stated:

“Duolingo raises awareness of learning English, especially speaking, by using engaging gamification methods, AI-based interactive exercises, and live conversation features. This platform provides regular speaking practice and provides instant feedback, so that I can improve my pronunciation and fluency effectively.”

R 8 stated:

“Duolingo raises awareness of learning English, especially speaking, through interactive learning methods and gamification that make learning fun. The pronunciation practice feature allows users to record and listen to their voice, helping to improve pronunciation independently. This approach motivates students to continue practicing and improving their abilities.”

R 9 stated:

“Duolingo is an excellent application as a medium for learning English, not only because it is free, but also because it provides various useful exercises, especially for speaking. Duolingo increases my awareness of learning to speak English because every time I do speaking exercises in Duolingo, they immediately give me the results or corrections, so it makes me even more interested in improving my speaking skills.”

R 10 stated:

“I really wanted to learn by myself but sometimes I don’t have much time. Using Duolingo helps me to improve my English in my spare time. I also know more about new vocabulary, do some strategies, and evaluate of my speaking through Duolingo.”

3.3. Discussion

Before the treatment, the responders completed a pre-speaking exam to assess their speaking. Following their treatment with the Duolingo application, the responders are required to complete a post-speaking assessment. As part of the treatment, you will respond to some vocabulary questions, dictate words, and pronounce some words that are based on questions. The participants completed the two-week program, with the majority of them utilizing Duolingo for 30 to 45 minutes each week. With the majority of participants moving from “Good” and “Fairly Good” categories pre-intervention to “Very Good” and “Excellent” categories post-intervention, the intervention dramatically improved participants’ performance. Compared to 11.43% prior to the intervention, 97.13% of participants scored in the top ranges after it. The majority of participants in this data

moved from average or below-average to above-average, indicating the efficacy of the intervention.

The post-test mean score climbed to 91.81 from the pre-test mean of 79.43, indicating a substantial improvement of 12.38 points. This demonstrates the efficacy of the intervention. In the post-test, the standard deviation dropped from 6.606 in the pre-test to 5.483, indicating that the results were more tightly packed around the mean. This decrease in variability suggests that participants' performance and understanding levels were successfully brought closer to one another by the intervention. All things considered, the intervention was successful in raising participant consistency and performance.

Overall, the interviews show that the use of Duolingo application, which can develop the self-reliance of high school students learning English by highlighting its effectiveness in independent learning, engagement through gamification, language skill improvement, and confidence-boosting English communication. The qualitative analysis highlights the various ways in which users view and gain from using Duolingo, demonstrating the platform's adaptability to meet a range of learning requirements and preferences.

4. Conclusion

Based on the study's findings, the researchers employed the Duolingo program to foster the development of high school students' self-reliance and found that it improved the students' capacity for speaking. The notable difference served as proof. differences in the speaking proficiency of students before and after using the Duolingo application, particularly in terms of phrase correctness and fluency. The post-test mean score climbed to 91.81 from the pre-test mean of 79.43, indicating a substantial improvement of 12.38 points. This demonstrates the efficacy of the intervention. Additionally, there was a mean percentage improvement of 64% and an average N-gain score of 0.64. While the majority of participants showed significant improvement, there was a discernible range in the degree of improvement.

The interviews show different facets of knowledge and cognitive control among English language learners using Duolingo. Most of the respondents believed that Duolingo application can develop the students' self-reliance. The interactive and gamified method used by Duolingo seems to greatly improve the knowledge and cognitive regulatory abilities required for language acquisition. Additionally, this study

provides a clear understanding of how Duolingo might foster the development of high school students' self-reliance while boosting speaking independence among high school students.

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