

---

## Students' perception on the use of the Duolingo application as a medium for developing university-level English language skills

Ario Ericsson Kamsik<sup>1\*</sup>, Afrianto Daud<sup>2</sup>, Masyhur<sup>3</sup>

Universitas Riau; Kampus Bina Widya Km. 12,5 Simpang Baru Pekanbaru, Telepon (0761) 63267 faximile (0761) 65804

e-mail: \*[ario.ericsson5293@student.unri.ac.id](mailto:ario.ericsson5293@student.unri.ac.id), [afrianto.a@lecturer.unri.ac.id](mailto:afrianto.a@lecturer.unri.ac.id), [masyhur@lecturer.unri.ac.id](mailto:masyhur@lecturer.unri.ac.id)

---

### ABSTRACT

*Keywords:*

*Duolingo; English Language Skill; Learning Media; Students Perception*

Duolingo has been a popular application for language learning nowadays. Using survey design, this study aims to investigate students' perceptions of the Duolingo app for improving English skills at a university in Indonesia. Over half the students surveyed actively use Duolingo. The findings reveals that 51 of the users poses positive attitudes towards the app. Students found that the app was most useful for enhancing listening and speaking skills, including pronunciation and fluency, due to Duolingo's interactive listening exercises and speech recognition features. Gamification elements like points and badges also made learning more enjoyable and maintained student motivation. These audio-focused, gamified, interactive features are what enabled Duolingo to build university students' oral/aural English skills and communicative competence. Additionally, students appreciated Duolingo's ability to facilitate mobile learning and simple, self-paced studying.. In summary, findings indicate Duolingo's audio-focused, gamified, interactive features have potential for building university students' oral/aural English skills and communicative competence.

---

## 1. INTRODUCTION

Despite the high internet penetration among Indonesian youth (98.64% of 19-34 year olds), most use it only for entertainment rather than education (Herdianto & Syahidin, 2020). In this industrial revolution 4.0, technology-based learning is one of the characteristics which integrate learning and teaching activities with the development of technology (Afrianto, 2018). There is an urgent need for engaging digital learning systems to motivate students. Study conducted by (Pratiwi et al., 2023; Rohmana, 2022) mentioned that digital learning supported by internet become accessible for teachers and students anytime, anywhere such as in teleconferencing classrooms and other various learning platforms, including from social media. Beside that, gamified language learning apps like Duolingo are highly effective solutions. According to Aulia et al., (2020), Duolingo's gamified mobile app with game features and instant feedback engages learners, motivates through varied tasks, and supports language skill development. Also, Duolingo gamifies learning to provide a sense of accomplishment that motivates and engages learners while reducing self-consciousness (Nushi & Eqbali, 2017).

Duolingo is the top education app with over 100 million downloads worldwide (Ceci, 2023). It provides interactive ways to learn languages that students find entertaining. However, research is lacking on Indonesian university students' perceptions of using Duolingo specifically to develop their English skills. This crucial study investigates how students at a

public university perceive Duolingo in improving their English proficiency. Since this particular university has not been a focus of prior research on Duolingo, investigating students' perceptions here will provide different insights. With reading habits declining, Duolingo may be the key to enhancing English learning. But research is needed to determine if students find Duolingo beneficial for English mastery or just view it as another entertainment app. The results will provide practical insights into leveraging Duolingo to boost English proficiency across Indonesia's tech-savvy student population.

## 2. METHOD

### 2.1. Research Design

This research adopted a quantitative research approach because the writer wants to collect data that could be easily measured and represented as numbers. The choice of a quantitative research approach strengthens the empirical foundation of this study, it allows us to contribute valuable data and insights to the broader discussion of the investigated topic. This approach offers objectivity, statistical precision, and the capacity to address issues at scale, making it a relevant method for various fields and discussions. According to Mills & Gay (2012), in quantitative research, events of interest are described, explained, predicted, or controlled by the collection and analysis of numerical data. These characteristics can, in fact, be measured, usually using equipment. As a result, statistical techniques were used to evaluate large amounts of data, and the results of the analysis were conveyed in descriptive terms.

Survey research design was used in this study. According to Mills & Gay (2012), a survey study design is a tool for examining a group of people's preferences, attitudes, behaviors, concerns, or interests. The primary data for the study was acquired through a cross-sectional survey, which means the data was collected from individuals at a specific moment in time. This method was particularly fitting for the research objectives as it allowed us to gain insights of attitudes and behaviors within a diverse population, capturing a comprehensive view of the topic at a specific point in time.

### 2.2. Population and Samples

**Table 1.** Number of population

Class	Number of Students
A	40
B	39
C	36
Total Students	115

The population of this study is the second semester student of the English Language Education Study Program, FKIP, at a public university in Indonesia. The second semester students are targeted as the population because most of them are using Duolingo application as part of their language learning process. Cluster random sampling technique was used as the method to pick the sample because this technique is usually used by lots of previous researchers to decide sample if the resource data that will be identified is too wide. Cluster random sampling technique was employed to select the sample because it is a widely recognized method in the research community, especially when dealing with extensive resource data. This approach facilitates more manageable data collection by dividing the population into clusters, making the research process both practical and cost-effective. The

sample to be taken is minimum of 20 students with experiences in using Duolingo with the data collection technique by distributing questionnaires through the *Google Form*. To identify respondents, the writer used a straightforward method. The writer included a "Duolingo user confirmation" question as a filter. If someone indicated "Yes," they proceeded to answer all the questions. If they chose "No," they were directed to the final section without completing the rest of the questions. This way, the writer efficiently distinguished between users and non-users of the Duolingo app.

### 2.3. Research Instrument

The type of data taken is in the form of students' answers statistic that show their acceptance of Duolingo app in improving their English Language Skills. The Google form that contains the 25-item questionnaire was distributed. The questionnaire is adapted from (García Botero & Questier, 2016; Inayah et al., 2020; Yang, 2012). The questionnaire is structured as follows:

**Table 2.** The blueprint of the questionnaire

No	Indicators	Item Numbers	Total
1	Mobile Assisted Language Learning	1 - 5	5
2	Usefulness	6 - 10	5
3	Motivational Tool	11 - 15	5
4	Language practice	16 - 22	7
5	Features	23 - 25	3
<b>Total Questions</b>			25

To obtain more detailed information about each indicator, the writer was included five open-ended questions. These questions were designed to elicit respondents' personal perspectives on each indicator's topic. By the end of each segment, each indicator was having one open-ended question.

### 2.4. Method of Data Collection

The questionnaire used in this study aimed to explore students' perceptions of the Duolingo application and its impact on their English language skills. The variables investigated were related to students' experiences and views regarding the use of Duolingo for language learning, particularly in terms of mobile-assisted language learning (MALL) and the development of English language skills. The questioner consists of adapted 25 statements and five open-ended questions which was carried out online by distributing a *Google Form* questionnaire link to selected samples through the *WhatsApp* messaging application. The distribution of the questionnaire was used WhatsApp because it is a one of the most familiar messaging app among the respondents. Then, the research was used Google Form because it has simple look and easy to use as both the writer and the respondents. The respondents selected an answer based on the Likert scale given from Strongly Agree to Strongly Disagree. Respondents was used this 5-point scale to answer these questions as shown:

**Table 3.** Likert scale rating

Option	Score
Strongly Agree (SA)	5
Agree (A)	4
Neutral (N)	3
Disagree (D)	2
Strongly Disagree (SD)	1

According to Sugiyono, (2014) if all respondents answer Strongly Agree (for example 100 respondents), the ideal total score for all items will be =  $100 \times 5 = 500$ . The total scores collected from the research were used to find the acceptance value to the Duolingo Application =  $(\text{Total score} : 500) \times 100\% = \text{The Expected Value } \%$ . The expected total score of acceptance value interval can be shown as:

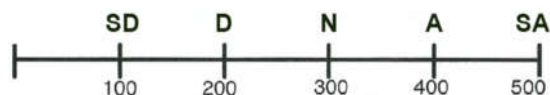


Figure 1. Total score of acceptance interval

## 2.5. Data Analysis Techniques

The data was obtained through the use of an online questionnaire created in *Google Forms*. The writer shared the URL with all participants via *WhatsApp*. The first section of the questionnaire collects general personal information, including name, age, and gender, as well as whether respondents have tried using the application.. The second portion discusses students' perception about MALL (Mobile-Assisted Language Learning), and the third section discusses students' perception about Duolingo's usefulness. The fourth segment contains the use of Duolingo App as motivational tool in learning. The fifth segment discusses the use of Duolingo in students' language practice. Finally, the last segment discusses Duolingo features that make students willing to use Duolingo continuously. Participants answered this survey by selecting one of these 5-point Likert Scale options (Strongly agree, agree, neutral, disagree, strongly disagree).

The data analysis in this study followed these steps:

- The writer used WhatsApp to distribute the online survey to the entire population of English Study Program 2022 batch students for two weeks, collecting a minimum sample of at least 20 students..
- After gathering all the data, Microsoft Excel 2019 was used to evaluate the results and check for averages (mean values) and percentages.
- After that, the survey's results were examined using Descriptive Statistic analysis. This analysis primarily involved examining the frequency distribution of responses. In this descriptive statistical analysis, we focused on summarizing how many participants selected each response option for the survey questions. This approach allowed us to gain insights into the distribution of responses and the consistency of participants' choices. While this analysis did not provide in-depth details on correlations or statistical tests, it offered a clear picture of respondents' preferences and patterns in their answers. Descriptive statistical analysis, as defined by Inayah et al. (2020), focuses on describing and presenting acquired data without making broader generalizations, exploring relationships, testing hypotheses, making predictions, or drawing conclusions.

## 3. RESULTS AND DISCUSSION

### 3.1. The Research Finding and Description

#### 3.1.1. Respondents Information Background

In this first section, the respondents' information backgrounds are discussed such as full name, age, class, gender, and confirmation questions that separate the entire population and the chosen sample. The respondents in this research were the second-

semester students of the English Study Program academic year 2022/2023 at one university in Indonesia. The writer distributed the questionnaire using a Google Form link through WhatsApp class Groups. Among the 115 targeted populations of three different classes, the writer received 97 responses with 51 students were sorted to filled the entire survey.

a. Age

**Table 4.** Age of respondents

Age	Respondents
18	13
19	71
20	9
21	2
22	2

Table 4 above shows the age of the total respondents (population). The domination of 71 out of 97 (73.2%) of the respondents are 19 years old, 13 out of 97 (13.4%) are 18 years old, 9 out of 97 (9.2%) are 20 years old, 2 out of 97 (2.1%) are 21 years old, and 2 out of 97 (2.1%) are 22 years old).

b. Class

**Table 5.** Class of respondents

Class	Respondents
A	37
B	28
C	32

Table 5 above shows the class of total respondents (population). The 97 respondents are the population in this research which are from three classes. The domination of 37 out of 97 (38.1%) of the respondents are A class students, 32 out of 97 (33%) are C class students, and 28 out of 97 (28.9%) are B class students.

c. Gender

**Table 6.** Gender of respondents

Gender	Respondents
Male	20
Female	77

Table 6 above shows the gender of the total respondents (population). The domination of 77 out of 97 (79.4%) of the respondents are female students, and 20 out of 97 (20.6%) are male students.

d. Duolingo user confirmation

**Table 7.** Duolingo user confirmation

Confirmation	Respondents
Yes	51
No	46

Table 7 above shows the number of total respondents (population) who never and ever tried using the Duolingo app. At this stage, the samples are automatically sorted. The respondents who chose the option "Yes" were picked as samples and proceeded to the next section. Whereas the respondents who choose the option "No" are automatically generated to the end section of the questionnaire, where they do not have to fill the further questions about the Duolingo app. The domination of 51 out of 97 (52.6%) of the respondents are ever tried using the Duolingo app, and 46 out of 97 (47.4%) are never tried the Duolingo app.

### 3.3. Findings

#### 3.3.1. MALL (Mobile Assisted Language Learning)

The first topic is about MALL and its importance for students. There are five statements related to this topic that are shown in the questionnaire:

**Table 8.** The statements of MALL (Mobile Assisted Language Learning)

Item	Statements
S1	In the m-learning setting, gadgets are beneficial for my education.
S2	In the m-learning setting, I can study without being constrained by time or place, mobile learning saves me time.
S3	In the m-learning setting, I hope I'll be able to utilize my gadgets in other classes as well.
S4	In the m-learning setting, using gadgets to study English are a lot of fun.
S5	In the m-learning setting, gadgets can increase my motivation to study.

The statements above are intended to determine the importance of Mobile Assisted Language Learning for students. With technology advancing rapidly, gadgets are becoming increasingly commonplace in classrooms around the world. Understanding student perspectives on these technologies could provide valuable insight of the role of technology in education.

**Table 9.** The responses of MALL (Mobile Assisted Language Learning)

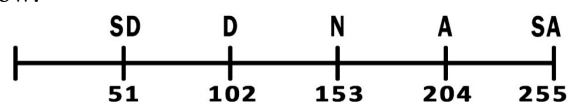
Statements	Respondents				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
S1	31 (60.8%)	20 (39.2%)	-	-	-
S2	12 (23.5%)	32 (62.7%)	6 (11.8%)	-	1 (2%)
S3	13 (25.5%)	28 (54.9%)	9 (17.6%)	1 (2%)	-
S4	22 (43.1%)	24 (47.1%)	5 (9.8%)	-	-
S5	12 (23.5%)	21 (41.2%)	17 (33.3%)	1 (2%)	-

The responses for each statement in this section are presented in the table above. The five statements show different responses among the students. In statement 1 (S1), there are 31 out of 51 students or 60.8% of the total samples who have chosen “Strongly Agree,” indicating a strong consensus among this group. Furthermore, 20 out of 51 students or 39.2% of the total samples have chosen “Agree,” demonstrating substantial support for this statement. On the other hand, statement 2 (S2) shows more varied responses, with 12 out of 51 students or 23.5% of the total samples choosing “Strongly Agree,” and 32 out of 51 students or 62.7% of the total samples favoring “Agree.” Additionally, 6 out of 51 students or 11.8% of the total samples have selected “Neutral,” while only 1 out of 51 students or 2% of the total samples has chosen “Strongly Disagree,” suggesting a range of viewpoints.

In statement 3 (S3), 12 out of 51 students or 23.5% of the total samples have chosen “Strongly Agree,” reflecting a notable preference for this statement. Additionally, 28 out of 51 students or 54.9% of the total samples have opted for “Agree,” indicating a majority in agreement. Nine out of 51 students or 17.6% of the total samples have chosen “Neutral,” while only 1 out of 51 students or 2% of the total samples has selected “Disagree,” showcasing a relatively low level of disagreement. For statement 4 (S4), 22 out of 51 students or 43.1% of the total samples have expressed “Strongly Agree,” and 24 out of 51 students or 47.1% of the total samples have chosen “Agree,” suggesting a substantial level of agreement. Additionally, 5 out of 51 students or 9.8% of the total samples have indicated “Neutral” as their choice.

Finally, statement 5 (S5) shows that 12 out of 51 students or 23.5% have chosen “Strongly Agree,” while 21 out of 51 students or 41.2% have favored “Agree.” Another 17 out of 51 students or 33.3% have opted for “Neutral,” and only 1 out of 51 students or 2% has chosen “Disagree,” indicating that this statement received varying levels of agreement. These percentages provide valuable insights into students' perceptions of the Duolingo app in enhancing their English language skills. The high percentages of 'Strongly Agree' and 'Agree' responses suggest a generally positive sentiment toward the app, while 'Neutral' and 'Disagree' responses indicate areas where opinions vary or differ.

After collecting the responses for each statement for MALL (Mobile Assisted Language Learning), we can find the conclusion by converting those data into “Average Acceptance Value” as shown below.



**Figure 2.** Total score of acceptance range MALL (Mobile Assisted Language Learning)

The figure above shows the range of acceptance for MALL (Mobile Assisted Language Learning). The range is derived from the value of each option multiplied by the total sample that responded. Thus, this results in the maximum value of each option.

Based on the results of the questionnaire above, the average acceptance value of each statement is shown in the table below:

**Table 10.** The average acceptance value of MALL (Mobile Assisted Language Learning) statements

Item	Statements	Avg. Value
S1	In the m-learning setting, gadgets are beneficial for my education.	235 (92%) Strongly Agree
S2	In the m-learning setting, I can study without being constrained by time or place, mobile learning saves me time.	207 (81%) Strongly Agree
S3	In the m-learning setting, I hope I'll be able to utilize my gadgets in other classes as well.	206 (81%) Strongly Agree
S4	In the m-learning setting, using gadgets to study English are a lot of fun.	221 (87%) Strongly Agree
S5	In the m-learning setting, gadgets can increase my motivation to study.	197 (77%) Agree
Total		213.5 (84%) Strongly Agree

Based on the Average acceptance value of each statement and the interval for MALL topic above, it can be seen that the total score for S1 is 235 which is the highest among the five statements. It means S1 has an acceptance value of 92% which the students are “Strongly Agree” of the usage of gadgets are beneficial for their education. The second highest score was obtained by the S4 with the score 221. This statement has an acceptance value of 87% which the students are “Strongly Agree” of using gadgets to study English are a lot of fun.

S2 is the third highest with 207 score. It has 81% of acceptance value which means the students are “Strongly Agree” by using MALL they can study without being constrained by time or place, and mobile learning saves time. Fourth, S3 has 206 score with 81% acceptance value. This is mean that the students are hoped that they will be able to utilize their gadgets in other formal classes as well. Lastly, S5 is the lowest with the score 197 and acceptance value of 77%. It shows us that the students are “Agree” with gadgets can increase their motivation to study.

To achieve more detailed data, the writer used an open-ended question in this section “What difficulties or obstacles have you encountered while using MALL (Mobile Assisted

Language Learning) for your English language studies?” Some of the students are admitted there are several obstacles that they encountered while using MALL in their language study. Most of them are commonly having internet connection issue and application bugs. “MALL often relies on an internet connection to access learning materials, resources, and online platforms. In areas with poor or limited internet connectivity, learners may face difficulties in accessing the required content or participating in online activities.” It is common today that lots of digital learning contents are requires internet connections. By having limited resources and access it can slow students’ learning progress through gadgets especially in MALL area.

Also, they admitted that sometimes MALL is not the only thing that they can do with their gadgets, which results in distractions while learning. “Sometimes I got distracted and play on social media instead”. Being consistent is quite difficult to the students in learning using MALL without having guidance and responsibility compared to the regular school. “Using MALL like Duolingo is good and fun, but because it is an independent learning, I feel difficult to be consistent in learning.” So in conclusion, the average score for MALL (Mobile Assisted Language Learning) section is 213.5 which 84% of the samples are “Strongly Agree” with the statements presented.

### 3.1.2. Duolingo Usefulness

The second topic is about Duolingo usefulness which to ascertain students’ opinions on the effectiveness of Duolingo as a language learning tool. There are five statements related to this topic that are shown in the questionnaire:

**Table 11.** The statements of Duolingo Usefulness

Item	Statements
S6	Duolingo is easy to use.
S7	Duolingo is easy to access.
S8	Duolingo is a helpful tool for learning English.
S9	Duolingo features are interesting and diverse.
S10	I am capable of using Duolingo alone, without assistance.

Getting feedback directly from students is important for assessing how well a tool like Duolingo works for language learning. Asking students focused questions about their experience using Duolingo and how effective they feel it is at helping them gain fluency can give valuable information about the app's strengths and weaknesses as a self-directed learning platform, based on the perspectives of real users.

**Table 12.** The responses of Duolingo Usefulness

Statements	Respondents				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
S6	27 (52.9%)	20 (39.2%)	3 (5.9%)	1 (2%)	-
S7	28 (54.9%)	18 (35.3%)	5 (9.8%)	-	-
S8	21 (41.2%)	25 (49%)	5 (9.8%)	-	-
S9	18 (35.3%)	22 (43.1%)	9 (17.6%)	2 (3.9%)	-
S10	19 (37.3%)	22 (43.1%)	8 (15.7%)	2 (3.9%)	-

The responses for each statement in this section are presented in the table above. The five statements continue to reveal varying responses among the students. In statement 6 (S6), a significant majority of 27 out of 51 students, or 52.9% of the total samples, have chosen “Strongly Agree” indicating a strong consensus in favor of this



statement. Additionally, 20 out of 51 students, or 39.2% of the total samples, have chosen “Agree” further emphasizing the positive perception. A small proportion, 3 out of 51 students, or 5.9% of the total samples, have chosen “Neutral” and 1 out of 51 students, or 2% of the total samples, has chosen “Disagree” suggesting that the sentiment toward this statement is predominantly positive. Statement 7 (S7) shows 28 out of 51 students, or 54.9% of the total samples, opting for “Strongly Agree,” while 18 out of 51 students, or 35.3% of the total samples, have chosen “Agree,” reflecting substantial agreement. A small number, 5 out of 51 students, or 9.8% of the total samples, have chosen “Neutral,” indicating some variation in responses.

Similarly, in statement 8 (S8), 21 out of 51 students, or 41.2% of the total samples, have expressed “Strongly Agree,” and 25 out of 51 students, or 49% of the total samples, have chosen “Agree,” underscoring the overall positive response. Another 5 out of 51 students, or 9.8% of the total samples, have selected “Neutral.” Moving on to statement 9 (S9), 18 out of 51 students, or 35.3% of the total samples, have chosen “Strongly Agree,” while 22 out of 51 students, or 43.1% of the total samples, have selected “Agree,” demonstrating a strong consensus in favor of this statement. Additionally, 9 out of 51 students, or 17.6% of the total samples, have chosen “Neutral,” and 2 out of 51 students, or 3.9% of the total samples, have chosen “Disagree,” indicating a limited degree of disagreement within this group. Lastly, statement 10 (S10) reveals that 19 out of 51 students, or 37.3% of the total samples, have chosen “Strongly Agree,” while 22 out of 51 students, or 43.1% of the total samples, have opted for “Agree,” reflecting a generally positive perception. Additionally, 8 out of 51 students, or 15.7% of the total samples, have chosen “Neutral,” and 2 out of 51 students, or 3.9% of the total samples, have chosen “Disagree.” These findings suggest a predominant alignment with this statement. The percentages provide valuable insights into students' perceptions of statements 6 to 10 regarding the Duolingo app's effectiveness in enhancing English language skills. The prevalence of 'Strongly Agree' and 'Agree' responses across these statements highlights a consistent positive sentiment, while the presence of 'Neutral' and 'Disagree' responses indicates some variability in student opinions, offering further depth to the analysis.

After collecting the responses for each statement for Duolingo usefulness, we can find the conclusion by converting those data into “Average Acceptance Value” as shown below.

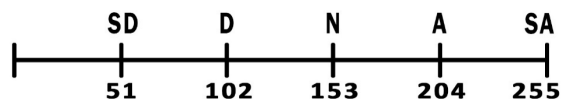


Figure 3. Total score of acceptance interval of Duolingo Usefulness

Figure 3 shows the range of acceptance for Duolingo Usefulness. The range is derived from the value of each option multiplied by the total sample that responded. Thus, this results in the maximum value of each option.

Based on the results of the questionnaire above, the average acceptance value of each statement is shown in the table 13.

**Table 13.** The average acceptance value of Duolingo Usefulness

Item	Statements	Avg. Value
S6	Duolingo is easy to use.	226 (89%) Strongly Agree
S7	Duolingo is easy to access.	227 (89%) Strongly Agree
S8	Duolingo is a helpful tool for learning English.	220 (86%) Strongly Agree
S9	Duolingo features are interesting and diverse.	209 (82%) Strongly Agree
S10	I am capable of using Duolingo alone, without assistance.	211 (83%) Strongly Agree
Total		218.6 (86%) Strongly Agree

Based on the Average acceptance value of each statement and the interval for Duolingo usefulness topic above, it can be seen that the total score for S7 is 227 which is the highest among the five statements. It means S7 has an acceptance value of 89% which the students are strongly agree that Duolingo is easy to access with their gadgets. The second highest score was obtained by the S6 with the score 226. This statement has an acceptance value of 89% which the students are strongly agree that Duolingo is easy to use. S8 is the third highest with 220 score. It has 86% of acceptance value which means the students are strongly agree that Duolingo is a helpful tool for learning English besides of the formal courses. Fourth, S10 has 211 score with 83% of acceptance value. Which means, the students are strongly agree that they are capable of using Duolingo alone, without assistance. Lastly, S9 is the lowest with the score 209 and acceptance value of 82%. It shows us that the students are strongly agree that Duolingo features are interesting and diverse.

To achieve more detailed data, the writer used an open-ended question in this section “What features of Duolingo that helped you most in your English language learning journey outside the class?” Duolingo offers students with so many features that are both entertaining and educating. For example, the exercise types are varied and challenging that can help students to develop their different language skills area. “Duolingo provides a variety of interactive exercises, including multiple-choice questions, translation tasks, listening exercises, and speaking practice. These exercises offer opportunities for learners to practice different aspects of the English language and develop my skills in a comprehensive manner.” Mostly the students are being helped by the speaking exercises feature so that they can practice their speaking ability anywhere and anytime. “For me is the feature of speaking, because it can practice my speaking skills which may not be too fluent in class.” So in conclusion, the average score for Duolingo Usefulness section is 218.6 which 86% of the samples are “Strongly Agree” with the statements presented.

### 3.1.3. Duolingo Application as Motivational Tool

The third topic is about Duolingo Application as Motivational Tool which to get to know if Duolingo can inspire students to take charge of their own language learning. There are five statements related to this topic that are shown in the questionnaire:

**Table 14.** The statements of Duolingo as Motivational Tool

Item	Statements
S11	Duolingo motivates me to dedicate more time outside of the classroom learning English.
S12	Duolingo can provide me with several alternatives for enhancing my English skills.
S13	Duolingo motivates me to learn English on my own.
S14	It is more enjoyable to practice English on gadgets using Duolingo than in a classroom.
S15	Duolingo makes learning English more pleasant and fascinating.

The purpose of the questions above is to determine if Duolingo can inspire students to take charge of their own language learning. Questions that assess if students feel empowered and eager to continue advancing their skills can show whether the app is successfully inspiring self-driven learning.

**Table 15.** The responses of Duolingo as Motivational Tool

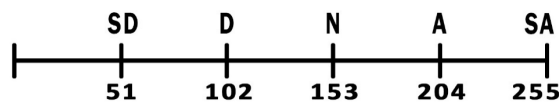
Statements	Respondents				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
S11	10 (19.6%)	25 (49%)	15 (29.4%)	1 (2%)	-
S12	10 (19.6%)	30 (58.8%)	11 (21.6%)	-	-
S13	17 (33.3%)	24 (47.1%)	9 (17.6%)	1 (2%)	-
S14	7 (13.7%)	23 (45.1%)	16 (31.4%)	5 (9.8%)	-
S15	13 (25.5%)	27 (52.9%)	11 (21.6%)	-	-

The responses for each statement in this section are presented in the table above, continuing to reveal diverse responses among the students. In statement 11 (S11), 10 out of 51 students, or 19.6% of the total samples, have expressed “Strongly Agree,” while 25 out of 51 students, or 49% of the total samples, have chosen “Agree,” indicating a notable level of agreement. Additionally, 15 out of 51 students, or 29.4% of the total samples, have opted for “Neutral,” and 1 out of 51 students, or 2% of the total samples, has chosen “Disagree,” suggesting that this statement has garnered a range of responses. Statement 12 (S12) follows a similar pattern, with 10 out of 51 students, or 19.6% of the total samples, selecting “Strongly Agree,” and a majority of 30 out of 51 students, or 58.8% of the total samples, favoring “Agree.” Additionally, 11 out of 51 students, or 21.6% of the total samples, have chosen “Neutral,” indicating a significant level of neutrality within this group.

Statement 13 (S13) presents a distinctive pattern, with 17 out of 51 students, or 33.3% of the total samples, opting for “Strongly Agree,” and 24 out of 51 students, or 47.1% of the total samples, choosing “Agree,” indicating a substantial level of agreement. Moreover, 9 out of 51 students, or 17.6% of the total samples, have selected “Neutral,” and 1 out of 51 students, or 2% of the total samples, has chosen “Disagree,” showcasing some variation in responses. In contrast, statement 14 (S14) exhibits different response patterns. Here, 7 out of 51 students, or 13.7% of the total samples, have chosen “Strongly Agree,” while 23 out of 51 students, or 45.1% of the total samples, have selected “Agree.” Additionally, 16 out of 51 students, or 31.4% of the total samples, have opted for “Neutral,” and 5 out of 51 students, or 9.8% of the total samples, have chosen “Disagree,” revealing a range of sentiments within this group. Finally, statement 15 (S15) demonstrates a unique distribution, with 13 out of 51 students, or 25.5% of the total samples, favoring “Strongly Agree,” and 27 out of 51 students, or 52.9% of the total samples, choosing “Agree.” Moreover, 11 out of 51 students, or 21.6% of the total samples, have opted for “Neutral,” indicating a moderate level of neutrality. The percentages in this section provide valuable insights into students' perceptions of statements 11 to 15 concerning the Duolingo app's

role as a motivational tool. While some statements reflect strong agreement or positivity, others show more varied responses, indicating the multifaceted nature of student perceptions.

After collecting the responses for each statement for Duolingo Application as Motivational Tool, we can find the conclusion by converting those data into “Average Acceptance Value” as shown below.



**Figure 4.** Total score of acceptance interval Duolingo as Motivational Tool

The figure above shows the range of acceptance for Duolingo Usefulness. The range is derived from the value of each option multiplied by the total sample that responded. Thus, this results in the maximum value of each option.

Based on the results of the questionnaire above, the average acceptance value of each statement is shown in the table below:

**Table 16.** The average acceptance value of Duolingo as Motivational Tool

Item	Statements	Avg. Value
S11	Duolingo motivates me to dedicate more time outside of the classroom learning English.	197 (77%) Agree
S12	Duolingo can provide me with several alternatives for enhancing my English skills.	203 (80%) Agree
S13	Duolingo motivates me to learn English on my own.	210 (82%) Strongly Agree
S14	It is more enjoyable to practice English on gadgets using Duolingo than in a classroom	185 (73%) Agree
S15	Duolingo makes learning English more pleasant and fascinating.	206 (81%) Strongly Agree
Total		200.2 (79%) Agree

Based on the Average acceptance value of each statement and the interval for Duolingo as motivational tool topic above, it can be seen that the total score for S13 is 210 which is the highest among the five statements. It means S13 has an acceptance value of 82% which the students are strongly agree of Duolingo motivates them to learn English by their own. The second highest score was obtained by S15 with the score 206. This statement has an acceptance value of 81% which the students are strongly agree that Duolingo makes learning English more pleasant and fascinating.

S12 is the third highest with 203 score. It has 80% of acceptance value which means the students are agree that Duolingo can provide them with several alternatives for enhancing their English skills. Fourth, S11 with the score 197 and 77% acceptance value shows us that the students are agree that Duolingo can motivate them to dedicate more time outside of the classroom learning English. Lastly, S14 is the lowest with the score 185 and acceptance value of 73%. It shows us that the students are agree that it is more enjoyable to practice English on gadgets using Duolingo than in a classroom.

To achieve more detailed data, the writer used an open-ended question in this section “What motivates you to spend more time learning English with Duolingo outside of the classroom?” Some of the students are share their thoughts which mostly their answers are “I want to maximize my free time outside the classroom to keep practicing my English skills and also because Duolingo can be accessed wherever I am so I can learn whenever and wherever.”

They also stated that learning with Duolingo is more fun than in the actual classroom because of its features. “It is easy to use and it is more fun than learning in the classroom.” And “Because Duolingo is very fun to use with a variety of English learning features I find it even more enjoyable.” So, in conclusion, the average score for Duolingo Application as Motivational Tool section is 200.2 which 79% of the samples are “Agree” with the statements presented.

### 3.1.4. Duolingo Application in Language Practice

The fourth topic is about Duolingo Application in Language Practice which to evaluate the role of Duolingo in facilitating the development of students’ language skills. There are seven statements related to this topic that are shown in the questionnaire:

**Table 17.** The statements of Duolingo Application in Language Practice

Item	Statement
S16	Duolingo assists me to improve my listening skills.
S17	Duolingo assists me to develop my speaking ability.
S18	Duolingo assists me to develop my reading ability.
S19	Duolingo assists me to develop my writing skills.
S20	Duolingo assists me to expand my vocabularies mastery.
S21	Duolingo assists me to practice translating words and sentences.
S22	Duolingo allows me to understand grammar and language structure.

The questions above are intended to evaluate the role of Duolingo in facilitating the development of students’ language skills. The questions aim to gather student perspectives on key aspects of Duolingo’s approach to language learning. Students can provide insights on how effective Duolingo is at helping them build real-world language proficiency and communication skills.

**Table 18.** The responses of Duolingo as Motivational Tool

Statements	Respondents				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
S16	12 (23.5%)	31 (60.8%)	8 (15.7%)	-	-
S17	10 (19.6%)	28 (54.9%)	12 (23.5%)	1 (2%)	-
S18	10 (19.6%)	28 (54.9%)	11 (21.6%)	2 (3.9%)	-
S19	9 (17.6%)	25 (49%)	15 (29.4%)	2 (3.9%)	-
S20	12 (23.5%)	31 (60.8%)	8 (15.7%)	-	-
S21	13 (25.5%)	31 (60.8%)	7 (13.7%)	-	-
S22	12 (23.5%)	27 (52.9%)	12 (23.5%)	-	-

The responses for each statement in this section are visually represented in the table above, showcasing distinct responses among the students. In statement 16 (S16), 12 out of 51 students, or 23.5% of the total samples, have chosen “Strongly Agree,” while a substantial majority of 31 out of 51 students, or 60.8% of the total samples, have expressed “Agree.” Additionally, 8 out of 51 students, or 15.7% of the total samples, have chosen “Neutral,” highlighting the presence of varying viewpoints. Statement 17 (S17) reflects a comparable pattern, with 10 out of 51 students, or 19.6% of the total samples, opting for “Strongly Agree,” and 28 out of 51 students, or 54.9% of the total samples, choosing “Agree,” signifying a significant level of agreement. Furthermore, 12 out of 51 students, or 23.5% of the total samples, have selected “Neutral,” while 1 out of 51 students, or 2% of the total samples, has chosen “Disagree,” indicating a range of sentiments within this group.

In statement 18 (S18), 10 out of 51 students, or 19.6% of the total samples, have chosen “Strongly Agree,” while a notable majority of 28 out of 51 students, or 54.9% of the total samples, have expressed “Agree.” Additionally, 11 out of 51 students, or 21.6% of the total samples, have opted for “Neutral,” and 2 out of 51 students, or 3.9% of the total samples, have chosen “Disagree,” signifying various degrees of response. Statement 19 (S19) portrays 9 out of 51 students, or 17.6% of the total samples, choosing “Strongly Agree,” and 25 out of 51 students, or 49% of the total samples, selecting “Agree,” emphasizing a strong level of agreement. Moreover, 15 out of 51 students, or 29.4% of the total samples, have chosen “Neutral,” while 2 out of 51 students, or 3.9% of the total samples, have chosen “Disagree,” indicating a range of responses within this group. Turning to statement 20 (S20), 12 out of 51 students, or 23.5% of the total samples, have opted for “Strongly Agree,” while a significant majority of 31 out of 51 students, or 60.8% of the total samples, have expressed “Agree.” Additionally, 8 out of 51 students, or 15.7% of the total samples, have selected “Neutral,” revealing the presence of different viewpoints. Statement 21 (S21) demonstrates that 13 out of 51 students, or 25.5% of the total samples, have chosen “Strongly Agree,” and 31 out of 51 students, or 60.8% of the total samples, have selected “Agree,” emphasizing a notable level of agreement. A smaller portion, 7 out of 51 students, or 13.7% of the total samples, have chosen “Neutral,” showcasing a moderate level of neutrality. Finally, statement 22 (S22) indicates 12 out of 51 students, or 23.5% of the total samples, favoring “Strongly Agree,” while 27 out of 51 students, or 52.9% of the total samples, have expressed “Agree.” Additionally, 12 out of 51 students, or 23.5% of the total samples, have chosen “Neutral,” suggesting a range of sentiments within this group. The percentages in this section offer valuable insights into students' perceptions of statements 16 to 22 regarding the Duolingo Application in Language Practice. While some statements indicate strong agreement, others show a diversity of responses, emphasizing the multifaceted nature of student opinions.

After collecting the responses for each statement for Duolingo Application in Language Practice, we can find the conclusion by converting those data into “Average Acceptance Value” as shown below.

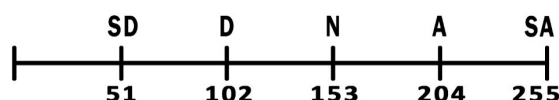


Figure 5. Total score of acceptance interval Duolingo Application in Language Practice

The range of figure above is derived from the value of each option multiplied by the total sample that responded. Thus, this results in the maximum value of each option.

Based on the results of the questionnaire above, the average acceptance value of each statement is shown in the table below:

Table 19. The average acceptance value of Duolingo Application in Language Practice

Item	Statements	Avg. Value
S16	Duolingo assists me to improve my listening skills.	208 (82%) Strongly Agree
S17	Duolingo assists me to develop my speaking ability.	200 (78%) Agree
S18	Duolingo assists me to develop my reading ability.	199 (78%) Agree
S19	Duolingo assists me to develop my writing skills.	194 (76%) Agree
S20	Duolingo assists me to expand my vocabularies mastery.	208 (82%) Strongly Agree
S21	Duolingo assists me to practice translating words and sentences.	210 (82%) Strongly Agree
S22	Duolingo allows me to understand grammar and language structure.	204 (80%) Strongly Agree
Total		203.2 (80%) Agree

Based on the Average acceptance value of each statement and the interval for Duolingo application in language practice topic above, it can be seen that the total score for S21 is 210 which is the highest among the seven statements. It means S21 have an acceptance value of 82% which the students are strongly agree of Duolingo assists them to practice translating words and sentences. The second highest score was obtained by both S16 and S20 with the score 208. It means both S16 and S20 have an acceptance value of 82% which the students are strongly agree of Duolingo assists them to improve listening skills and expand their vocabularies mastery. S22 is the third highest with 204 score. This statement has an acceptance value of 80% which the students are strongly agree that Duolingo allows them to understand grammar and language structure.

The fourth highest score is S17 with 200 score. It has 78% of acceptance value which means the students are agree that Duolingo assists them to develop their speaking ability. The fifth is S18, which has 199 score with 78% of acceptance value. This is mean the students agree that Duolingo assists them to develop their reading ability. Lastly, S19 is the lowest with the score 194 and acceptance value of 76%. It shows us that the students are agree that Duolingo assists them to develop their writing skills.

To achieve more detailed data, the writer used an open-ended question in this section “Which language skill in Duolingo exercises do you find most engaging or captivating for practicing English?” Some of the students are share their thoughts which mostly their answers are “The listening comprehension, Duolingo includes exercises that focus on listening skills, where I listen to audio clips and answer questions based on what we hear.” Along with the listening exercise, speaking exercise also students’ favorite exercise. “Skills in pronunciation in my opinion very interesting.” So, in conclusion, the average score for Duolingo Application in Language Practice section is 203.2 which 80% of the samples are “Agree” with the statements presented.

### 3.1.5. Duolingo Application Features

The fourth topic is about Duolingo Application in Language Practice which to evaluate the role of Duolingo in facilitating the development of students’ language skills. There are seven statements related to this topic that are shown in the questionnaire:

**Table 20.** The statements of Duolingo Application Features

Item	Statement
S23	Duolingo features are enjoyable because it adapts from video game elements.
S24	Duolingo features help me to keep motivated in using this app.
S25	Duolingo features spark my will to compete with other users.

The questions above are designed to gather information on whether the features of Duolingo are engaging and challenging, as well as to elicit personal opinions on the user experience of the Duolingo app. Getting insights into how motivating and effective Duolingo's interactive lessons, gamified elements, and other tools are can help determine their impact on students' language development and fluency.

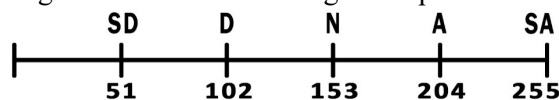
**Table 21.** The responses of Duolingo Application Features

Statements	Respondents				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
S23	12 (23.5%)	28 (54.9%)	9 (17.6%)	2 (3.9%)	-
S24	7 (13.7%)	29 (56.9%)	13 (25.5%)	2 (3.9%)	-
S25	10 (19.6%)	25 (49%)	15 (29.4%)	1 (2%)	-

The responses for each statement in this section are presented in the table above. The three statements show different responses among the students. In statement 23 (S23), there are 12 out of 51 students or 23.5% of the total samples have chosen “Strongly Agree”. Then 28 out of 51 or 54.9% of the total samples have chosen “Agree”. Next, 9 out of 51 students or 17.6% of the total samples have chosen “Neutral”. And 2 out of 51 students or 3.9% of the total samples have chosen “Disagree”. In statement 24 (S24), 7 out of 51 students or 13.7% of the total samples have chosen “Strongly Agree”. 29 out of 51 students or 56.9% of the total samples have chosen “Agree”. Next, 13 out of 51 or 25.5% of the total samples have chosen “Neutral”. Then 2 out of 51 students or 3.9% of the total samples has chosen “Disagree”.

Lastly, in statement 25, (S25) there are 10 out of 51 students or 19.6% of the total samples have chosen “Strongly Agree”. Then, 25 out of 51 students or 49% of the total samples have chosen “Agree”. 15 out of 51 students or 29.4% of the total samples have chosen “Neutral”. And 1 out of 51 students or 2% of the total samples has chosen “Disagree”.

After collecting the responses for each statement for Duolingo Application Features, we can find the conclusion by converting those data into “Average Acceptance Value” as shown below.



**Figure 6.** Total score of acceptance interval Duolingo Application Features

The figure above shows the range of acceptance for Duolingo Application Features. The range is derived from the value of each option multiplied by the total sample that responded. Thus, this results in the maximum value of each option.

Based on the results of the questionnaire above, the average acceptance value of each statement is shown in the table below:

**Table 22.** The average acceptance value of Duolingo Application Features

Item	Statements	Avg. Value
S23	Duolingo features are enjoyable because it adapts from video game elements.	203 (80%) Agree
S24	Duolingo features help me to keep motivated in using this app.	194 (76%) Agree
S25	Duolingo features spark my will to compete with other users.	197 (77%) Agree
Total		198 (78%) Agree

Based on the Average acceptance value of each statement and the interval for Duolingo application features, it can be seen that the total score for S23 is 203 which is the highest among the three statements. It means S23 have an acceptance value of 80% which the students are agree that Duolingo features are enjoyable because it adapts from video game elements. The second



highest score was obtained by S25 with the score 197. This statement has an acceptance value of 77% which the students are agree that Duolingo features spark their will to compete with other users. Lastly, S24 is the lowest with the score 194 and acceptance value of 76%. It shows us that the students are agree that Duolingo features help them to keep motivated in using this app.

To achieve more detailed data, the writer used an open-ended question in this section "How do you think the game-elements features in Duolingo can motivate you to learn English language?" Some students shared that "Duolingo has successfully leveraged gamification to create an engaging and effective user experience for me. By incorporating elements such as streaks, levels, and rewards, the app has been able to motivate me to stay committed to their language learning goals." They also said the "game-elements make students motivated to learn more by their own because they can learn and play at the same time." As one student stated, "I think the game elements features in Duolingo can motivate me go learn English because we know that every young people like game and it also fun." In summary, 78% of students "Agreed" with the Duolingo app feature statements, giving an average score of 198.

### **3.2. Discussion**

The study, conducted among university-level ESL students in the 2022 batch of the English Language Study Program, explores two primary inquiries. First, it examines how these students perceive Duolingo's impact on their English language skills, with a specific focus on motivation and skill development. Second, the research investigates the specific language skills that students predominantly enhance through Duolingo, providing valuable insights into the platform's effectiveness and its implications for future educational use of similar digital tools.

Notably, over half of the students in the study were found to be active users of Duolingo, revealing the platform's prevalence within this academic context. This highlights the need for educators to consider the integration of digital language learning tools like Duolingo in ESL programs.

In the realm of Mobile Assisted Language Learning (MALL), students widely endorsed the benefits of using gadgets for mobile language learning. They strongly agreed that the convenience of accessing lessons on gadgets, whether through free or paid services, greatly contributed to the appeal of learning through digital means. These perspectives align with prior research conducted by Hidayati & Diana (2019), which highlighted the widespread use of Duolingo across various settings. Additionally, students expressed their enjoyment of learning English via gadgets, attributing this satisfaction to Duolingo's diverse learning options and engaging activities. These findings suggest that the integration of mobile language learning tools, like Duolingo, can enhance students' motivation and engagement in English language learning, which is a vital aspect of ESL education. Educators can take these insights into account when designing or selecting digital learning materials and resources.

Moving on to the practicality and usability of Duolingo, students in the study found the platform to be user-friendly, emphasizing its modern and enjoyable interface. This observation corroborates previous research by Redjeki & Muhajir (2020), which noted Duolingo's accessibility and appeal, particularly in the context of internet connectivity. Furthermore, the study revealed that Duolingo excels in motivating students to independently learn English, with a majority of students strongly agreeing that it spurred their motivation. This aspect was validated by research underlining the positive relationship between motivation and academic success (Redjeki & Muhajir, 2021; Shortt et al., 2023). These findings emphasize the importance of user-friendly interfaces and modern design in educational technology. They also suggest that

Duolingo's approach to gamification and motivational features can positively influence the independent learning behavior of ESL students. This insight has practical implications for educational institutions and digital language learning tool developers seeking to create engaging and effective learning platforms. It's important to note, however, that some students still favored traditional classroom practices for developing their English-speaking skills, valuing the irreplaceable role of face-to-face communication and teacher guidance. This finding indicates that while digital tools like Duolingo can offer significant benefits, they should be considered as complementary rather than substitutes for traditional classroom instruction.

In conclusion, the study's findings collectively underscore the overwhelmingly positive perception of Duolingo among the university-level ESL students, who consider it an enjoyable and motivating tool for improving their English language skills. Specifically, they found Duolingo to be highly effective in enhancing listening and speaking abilities, with a focus on achieving native-like pronunciation and fluency. These insights highlight the value of Duolingo's gamified and audio-focused approach in supporting oral communication skills, providing valuable guidance for educators and learners engaged in digital language learning activities.

#### 4. CONCLUSION

This study explored the perceptions of 97 students within the English Department of the university regarding their use of the Duolingo Application for English language skill development. Among these students, 51 had used Duolingo and were included in the study. The research findings indicated that the majority of students found Duolingo to be a valuable tool for their English language learning, particularly in the context of Mobile Assisted Language Learning (MALL). Duolingo's accessibility on digital devices and its diverse, engaging features contributed to its popularity.

Furthermore, Duolingo was found to motivate students to learn independently, with a focus on practicing speaking and listening skills. Students' most developed English skills were attributed to their improved pronunciation and ability to adapt to native speakers' speech patterns. The gamification elements within Duolingo, including streaks, levels, leaderboards, and rewards, were noted as particularly effective in encouraging students to engage with the platform and enhance their language skills.

#### REFERENCES

- Afrianto, A. (2018). Being a professional teacher in the era of industrial revolution 4.0: Opportunities, challenges and strategies for innovative classroom practices. *English Language Teaching and Research*, 2(1), Article 1. <https://ejournal.unp.ac.id/index.php/eltar/article/view/102675>
- Aulia, H. R., Wahjuningsih, E., & Andayani, R. (2020). Effect of Duolingo Application on students' English vocabulary mastery. *ELTR Journal*, 4(2), 131–139. <https://doi.org/10.37147/eltr.v4i2.71>
- Ceci, L. (2023). Number of Duolingo app downloads worldwide from 1st quarter 2017 to 3rd quarter 2023, by region. *Statista*. <https://www.statista.com/statistics/1239391/duolingo-number-of-worldwide-downloads-by-region/>
- García Botero, G., & Questier, F. (2016). What students think and what they actually do in a mobile assisted language learning context: New insights for self-directed language learning in higher education. In S. Papadima-Sophocleous, L. Bradley, & S. Thouësny (Eds.), *CALL communities and culture – short papers from EUROCALL 2016* (pp. 150–154). Research-publishing.net. <https://doi.org/10.14705/rpnet.2016.eurocall2016.553>

- Herdianto, R., & Syahidin, D. (2020). Gadget & adolescent: Its effect depiction on the daily life. *Bulletin of Social Informatics Theory and Application*, 4(2), 40–51. <https://doi.org/10.31763/businta.v4i2.266>
- Hidayati, T., & Diana, S. (2022). Students' motivation to learn English using mobile applications: The case of Duolingo and Hello English. *JEELS (Journal of English Education and Linguistics Studies)*, 6(2), 189–213. <https://doi.org/10.30762/jeels.v6i2.1233>
- Inayah, N., Yusuf, Q., & Fibula, N. (2020). Exploring undergraduate students' perception toward the use of Duolingo in learning English. *Humanities & Social Sciences Reviews*, 8(3), 76–85. <https://doi.org/10.18510/hssr.2020.839>
- Mills, G., & Gay, L. (2016). Education research: Competencies for analysis and applications. *Journal of Applied Learning & Teaching*, 1(2), 71–72. <https://doi.org/10.37074/jalt.2018.1.2.14>
- Nushi, M., & Eqbali, M. H. (2017). Duolingo: A mobile application to assist second language learning. *Teaching English with Technology*, 17(1), 89–98.
- Pratiwi, T. M. S., Chandra, N. E., & Arapah, E. (2023). Exploring students' perception on the use of Instagram as a platform in Creative Writing course. *Journal of English Language Teaching and Learning (JETLE)*, 4(2), Article 2. <https://doi.org/10.18860/jetle.v4i2.20675>
- Redjeki, I. S., & Muhajir, R. (2020). Duolingo for grammar learning. *Prosiding LPPM UIKA Bogor*. <https://pkm.uika-bogor.ac.id/index.php/prosiding/article/view/659>
- Redjeki, I. S., & Muhajir, R. (2021). Gamification in EFL classroom to support teaching and learning in 21st century. *JEES (Journal of English Educators Society)*, 6(1), 68–78. <https://doi.org/10.21070/jees.v6i1.882>
- Rohmana, W. I. M. (2022). The use of Livemocha: A platform for independent language learning. *Abjadia: International Journal of Education*, 7(1), Article 1. <https://doi.org/10.18860/abj.v7i1.15234>
- Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., & Akinkuolie, B. (2023). Gamification in mobile-assisted language learning: A systematic review of Duolingo literature from public release of 2012 to early 2020. *Computer Assisted Language Learning*, 36(3), 517–554. <https://doi.org/10.1080/09588221.2021.1933540>
- Sugiyono, S. (2014). *Metode Penelitian Kuantitatif, Kualitatif dan R & D*. Alfabeta.
- Yang, S. (2012). Exploring college students' attitudes and self-efficacy of mobile learning. *Turkish Online Journal of Educational Technology - TOJET*, 11(4), 148–154.