# Student's Perception Of Using Duolingo As An English Learning Application

*Mezia Kemala Sari[1,*], Nurul Hadina[2], Efri Yoni[3]*

[1,2,3]*Muhammadiyah University of West Sumatra, Padang Panjang,* Indonesia

## Article Informations

## A B S T R A C T

This study proposes to find out the student perception toward the use of Duolingo as an English learning application, Duolingo as a motivation tool to increase their motivation for learning English, and aspects of language that can be improved by language skill practice items on Duolingo. This study was quantitative research by using questioner as the data collection technique. This study was conducted on August 16, 2021, with the ninth-grade students at SMP Muhammadiyah Padang Panjang. The sample of this study consists of 16 students. The result showed that a lot of students gave a positive response to their experience using Duolingo based on the questionnaire. Duolingo is useful and helpful and it brings motivational benefits for students in English learning. Moreover, it shows that they easily master the fourth language skills and even practice their English in their daily life. Duolingo provides many uses for students as an English learning application. The use of Duolingo can help students learn English interestingly and make the learning process more enjoyable. Therefore, the use of Duolingo is recommended for English learning to help students improve their language learning abilities.

### Abstrak

*Penelitian ini bertujuan untuk mengetahui persepsi siswa terhadap penggunaan Duolingo sebagai aplikasi pembelajaran bahasa Inggris, Duolingo sebagai alat motivasi untuk meningkatkan motivasi belajar bahasa Inggris dan aspek bahasa yang dapat ditingkatkan dengan item latihan keterampilan bahasa di Duolingo. Penelitian ini merupakan penelitian kuantitatif dengan menggunakan kuesioner sebagai teknik pengumpulan data. Penelitian ini dilaksanakan pada tanggal 16 Agustus 2021 pada siswa kelas IX SMP Muhammadiyah Padang Panjang. Sampel penelitian ini berjumlah 16 siswa. Hasil penelitian menunjukkan bahwa banyak siswa yang memberikan respon positif terhadap pengalaman mereka menggunakan Duolingo berdasarkan kuisioner yang disebar. Duolingo bermanfaat, membantu dan dapat memotivasi siswa dalam belajar bahasa Inggris. Selain itu, hasil penelitian menunjukkan bahwa mereka dengan mudah menguasai keempat keterampilan bahasa dan bahkan mempraktekkan bahasa Inggris mereka dalam kehidupan sehari-hari. Duolingo memberikan banyak kegunaan bagi siswa sebagai aplikasi pembelajaran bahasa Inggris. Penggunaan Duolingo dapat membantu siswa untuk belajar bahasa Inggris dengan cara yang menarik dan membuat proses belajar menjadi lebih menyenangkan.Oleh karena itu, penggunaan Duolingo direkomendasikan untuk pembelajaran bahasa Inggris untuk membantu siswa meningkatkan kemampuan belajar bahasa mereka.*

## 1. Introduction

Technology has brought us into a new era of teaching and learning. Halverson & Smith (2009) mentioned that technology makes the learning process more attractive, and flexible and motivates students, and technology also increases learning productivity and efficiency. Students can use computers, the internet, or other technology to help them learn. They can download language learning applications and it will help them in the language learning process.

Language and technology have been deeply intertwined since the invention of writing some five thousand years ago (Chun et al, 2016) and in language instruction, technology has played an important role in the process of learning and teaching. Teachers, lecturers, and educators or else are now experiencing the use and the effect of the growth of the technology. It is supported by the growth of the internet that exponentially developed over the last few years and all of people nowadays experience and feel the benefits of them.

Access to technology, the connectivity have become one of the factors of the key success to integrate mobile learning in higher education or even every level of education nowadays. Mobile learning, also called m-learning has recently emerged as one of the new types or the new thing to be used in the learning process. This learning model enables the student or learner to study, learn, and access the materials easily, anywhere and anytime just by using two great combinations of things, namely mobile devices and also the internet (Lan & Sie, 2010).

This situation has widely opened the eyes of people in improving and enhancing their spirit to study because everything has become easier to get like the materials for learning, the new information, the explanation about the materials, and many more. In fact, technology has great potential to increase or improve students' motivation and studying or learning to make them enjoy the process including inside or outside the classroom. But, it is not only about the mobile and the internet, moreover, it is about the learning application.

Mindog (2016) mentioned that learning applications have become available everywhere both inside and outside the classroom including in English learning. The use of learning applications almost all over the world has been famous and in demand. There are several English learning applications such as Duolingo, Hello English, Memrise, Listening Drill, Grammar Up, etc.

Duolingo is one of the most popular language-learning applications. It is an application that can be accessed using a computer or mobile phone for free. Munday (2015) stated that Duolingo aims to teach fun languages, even though this application presents a combined activity between several skills in the form of a game. It connects lessons with a game that can build interest in learning the language. Duolingo combines elements of audio, visual, and questions surrounding vocabulary and grammar enjoyably. Thus, it can give the influence to improve English language skills for its users.

The use of technology in education is in line with the school digitization program by the Ministry of Education and Culture. Minister of Education and Culture Nadiem Anwar Makarim on 5 November 2020, revealed that his ministry would focus on the digitalization program for 2021. The digitalization of schools also plays an important role in the Merdeka Learning program to realize future classroom and school infrastructure. Through the digitization of schools, teachers, students, and academic staff in relevant schools can use educational technology. Teachers can access more varied information and material. Students can participate in a more dynamic education and various kinds of technology adoptions. Moreover, the adoption of educational technology during this COVID-19 pandemic has increased significantly. The combination of the face-to-face learning process and online learning with technology contributes to more effective learning.

Considering the positive implication of educational technology for more effective learning especially during the Covid-19 outbreak, it can be concluded that the use of technology such as language learning applications is a step to support the school digitization program. However, there are still a lot of schools that have not utilized technology maximally and since the beginning of the education industry, technological advancement has become one of the crucial things in shaping its direction (Habibi, 2020)

Duolingo is very relevant to the government curriculum 2013 for English subjects in junior high schools because Duolingo contains discourse competence. Discourse competence is the ability to understand and produce any language in spoken and written texts. These texts are related to the four

language skills namely listening, speaking, reading, and writing skills. The four skills can be obtained through many activities in Duolingo.

The use of educational games seems gained popularity in recent years and now has become a key issue for academics, educators, and also practitioners around the world (Redjeki and Muhajir, 2021). Furthermore, they mentioned that gamification as the process of integrating gameplay has now become an innovative tactic that has been considered as having the potential to overcome challenges associated with language acquisition and instruction.

Moreover, Shortt et al (2021) the gamified language learning program of Duolingo has been used by more than 300 million people around the world. This famous thing has stolen people's attention who learn English as a foreign language or second language and this well-known educational platform also gives away many free classes in a variety of languages on the internet and also through several mobile applications (Jiang et.al, 2021).

One of the problems that must be solved immediately is about learning motivation. The motivation problem of students is indicated by their low level of understanding and less interest to study in the classroom and it is difficult enough to find the situation where students learn enthusiastically. Mostly, the teaching teacher-centered is still easy to find in the teaching-learning process where the focus is just on the student understanding of the material and ignoring their interest. Then, Chun et al (2016) stated that the integration of mobile technology in language learning can facilitate the teachers to have authentic learning materials and also guide learners to do some interactions which must be more interesting.

So, it is very convincing that the use of game-based learning applications such as Duolingo has become a new trend that adds color to the world of education, especially learning foreign languages. For students, this will be something that makes things easier and attracts attention. Of course, with guidance from competent teaching staff. For this reason, this research will specifically investigate how high school students respond to the presence of the use of this application which will certainly have an impact and contribute to literature on research that focuses on the use of Duolingo in the world of education in Indonesia in particular.

## 2. Research Objectives

The following research objectives were formulated to guide the study:

1) To discover student perception toward the use of Duolingo as an English learning application.

2) To identify student perception about Duolingo as a motivation tool to increase their motivation for learning English.

3) To observe student perception about the aspect of language that can be improved by language skill practice items on Duolingo.

## 3. Literature Review

Perez (2020) mentioned that Duolingo is the most downloaded platform or application in terms of language learning and is issued by one million individuals all over the world. Furthermore, this mobile application comes packed with many variety and awesome features that have cooperated with the elements of game-based learning.

Duolingo as quoted from an article from The Guardian is a free language learning app created by Luis Von Ahn and Severin Hacker and was launched in November 2011. This application offers 68 different language courses available in 23 languages, with 22 additional courses that are still under development (Habibi, 2020). This application can be used on Android, IOS, and also Windows Phone. This application was made to be used easily anytime and anywhere. It gives new experiences for the learners where they can play and learn at the same time.

Wilbert et al (2016) defined Duolingo as the future of language learning and global communication in the form of a mobile-based language application that uses a combination of audio, visual, and also the questions about grammar, and structure of a language.

The term learning means acquiring knowledge or skills in a new subject or activity, and learning means the process of acquiring knowledge (Sarkol, 2016). Language is indeed a way of communication between members of society. In addition, Rustipa (2015) stated that learning a language means knowing the language, knowing the rules, being aware of the language, and having the ability to talk to the language.

Islam & Mazumder (2010) stated that an application consists of software or a set of programs running on a mobile device. In addition, the applications used to learn and teach languages have become very diverse. Some language learning applications can motivate students to learn and improve their language skills through various available features (such as text, images, animation, audio, and video).

Duolingo is a language learning application that provides practical and systematic steps for students to learn foreign languages independently. Nathanael and Byron (in Fatah, 2019) mentioned that Duolingo is a language learning application that is practical and easy to use as a foreign language course to improve students' language skills. Lionetti (in Amalia, 2019) mentioned that Duolingo is a free gamified e-learning tool that allows students to learn how to speak one foreign language such as English, Italian, French, and so on. Duolingo can be downloaded on mobile phones or registered on computers, so students will practice it anytime and anywhere. The use of gamification in learning environments is considered an important supplementary tool in the learning process (Muhammad et al., 2019).

In addition, Ryder and Machajewski (2017) stated that gamification brings motivational benefits; it encourages an incremental, rather than an entity theory of knowledge. Veselinov and Grego (2012) showed that the main factor of Duolingo's effectiveness is to motivate students to learn and significantly improve their language learning process.

Nasution (in Mardiah, 2020) mentioned that perception is the stimulus someone receives and his observation. With the help of personal perception, people can understand the state of the surrounding environment and the inner things of the person. Moreover, a perception not only occurs at one time. But can also occur in the past, present, and future.

Based on the previous research by many researchers who also interested with this amazing application, it can be concluded that Duolinggo as a kind of gamification is chosen as one method to learn English independently at home or in the classroom.

## 4. Methodology

The design of this study is quantitative research. Aliage and Gunderson (in Apuke, 2017) defined quantitative research as explaining and exploring social problem phenomena by collecting numerical data using mathematical methods such as statistics for analysis. This study aims to determine the percentage of student perception on the use of Duolingo as an English learning application in the ninth-grade students at SMP Muhammadiyah Padang Panjang. The population of this study is the ninth-grade students of SMP Muhammadiyah Padang Panjang, who are currently using or have already used Duolingo as an English learning application. In this case, the population consisted of 26 students. The sample of this study was selected using purposive sampling. In this study, the sample consisted of 16 students.

This study uses a questionnaire as an instrument. The questionnaire was prepared to obtain information to know student perceptions of the use of Duolingo as an English learning application. This study uses a closed questionnaire. The questionnaire adopted by Inayah, et al (2020) mentioned

17 questions in the questionnaire using the Likert scale method which each statement answered from strongly disagree (SD), disagree (D), neutral (N), agree (A), and strongly agree (SA). The questionnaires were translated into Bahasa Indonesia. To make it easy for the ninth-grade students of SMP Muhammadiyah Padang Panjang to understand the questions and provide the answers. The following formula is used to calculate the percentage frequency of each statement according to Sudjono (in Utami, 2020).

$$P = F/N \times 100\%$$

Abbreviation:

*P* = percentage

*F* = frequency

*N* = the number of samples

100% = constant value

## 5. Finding and Discussion

### 5.1. Findings

The questionnaire was used to get data about student perception of the use of Duolingo as an English learning application. The number of questions in the questionnaire is seventeen. This study provided a closed questionnaire. This study was conducted on August 16, 2023, with the ninth-grade students at SMP Muhammadiyah Padang Panjang. The data can be seen in the following tables and descriptions. The questionnaire consists of 17 questions in three parts.

**Table 1.** Percentages of Questionnaire

| Questions | SA | D | N | A | SA |
|---|---|---|---|---|---|
| **Usefulness** | | | | | |
| 1.  Duolingo is simple to use | 0 | 0 | 0 | 56,25 | 43,75 |
| 2.  Duolingo is easy to access | 0 | 0 | 6,25 | 68,75 | 25 |
| 3.  Duolingo is a helpful tool for learning English | 0 | 0 | 6,25 | 43,75 | 50 |
| 4.  Duolingo features are interesting and variation | 0 | 0 | 12,15 | 68,75 | 18,75 |
| 5.  I can use Duolingo independently without others' help | 0 | 0 | 18,75 | 62,75 | 18,75 |
| **Motivation tool** | | | | | |
| 6.  Duolingo encourages me to spend more time learning English outside of the classroom | 0 | 6,25 | 31,25 | 43,75 | 18,75 |
| 7.  Duolingo can bring many opportunities for me to learn English | 0 | 0 | 25 | 62,5 | 12,5 |
| 8.  Duolingo encourages me to learn English independently | 0 | 6,25 | 12,5 | 75 | 6,25 |
| 9.  Duolingo can help me improve my English | 0 | 6,25 | 18,75 | 37,5 | 37,5 |
| 10.  Duolingo make English learning more enjoyable and interesting | 0 | 0 | 18,75 | 43,75 | 37,5 |
| 11.  It is more fun to practice English using Duolingo on the smartphone than in the classroom | 0 | 0 | 25 | 43,75 | 31,25 |
| **Language skill practice items** | | | | | |
| 12.  I can increase my vocabulary using Duolingo | 0 | 6,25 | 18,75 | 43,75 | 31,25 |
| 13.  I can improve my listening using Duolingo | 0 | 0 | 18,75 | 62,5 | 18,75 |
| 14.  I can improve reading using Duolingo | 0 | 0 | 12,5 | 62,5 | 25 |
| 15.  I can improve writing using Duolingo | 0 | 6,25 | 6,25 | 68.75 | 18,75 |
| 16.  I can practice translating words and sentences using Duolingo | 0 | 0 | 12,5 | 43,75 | 43,75 |
| 17.  I can learn grammar or language structure using Duolingo | 0 | 0 | 18,75 | 37,5 | 43,75 |

**5.2. Discussion**

This study seeks the student's perception of using Duolingo to learn English. Generally, the findings showed a positive answer about using Duolingo to support their learning system and experience. For some students, it must be a new thing and a new experience to learn using a mobile phone in the form of a game in the form of an application. Because of that, this research must be more valuable to observe or to reveal their perception about using Duolingo in their learning process.

The results of this study show that student perception about the use of language learning applications in learning English. The purpose of this study is to find out the students' perceptions of the usefulness of Duolingo, Duolingo is a motivational tool to increase their motivation for learning English and aspects of language that can be improved by language skill practice items on Duolingo. This application can make them more motivated to learn the language and easy to use. They are interested in learning by using Duolingo and they can easily master the fourth language skills and even practice their English in their daily life. To get a clear idea of the results of this study, the explanation can be described as follows.

The first research question is student perception toward the use of Duolingo as an English learning application. The result showed the students gave different perceptions based on their experience in using Duolingo and many students gave more positive perceptions. 56,25 % of students agree that Duolingo is simple to use. 68,75 % of students agree that Duolingo is easy to access. 50 % of students strongly agree that Duolingo is a helpful tool for learning English. 68,76 % of students agree that Duolingo features are interesting and vary. And 62,5 % of students agree that they can use Duolingo independently without others' help. Based on the percentage it can conclude that students agree that Duolingo has much usefulness as a learning language application for learning English. These findings are in line with the study from Nushi and Eqbali (2017) who support that Duolingo is a useful language application that can provide students with practical and systematic steps to learn a new language on their own.

In line with Habibi (2020) in his finding which states that Duolingo application has a positive impact on students' motivation like writing and other language skills. The finding indicates that student is generally quite enthusiastic and interested use this application in learning English independently because they can greatly enjoy their flexibility and practice. Moreover, this finding strengthens the fact that several kinds of literature also highlighted the great potential and the positive response to mobile learning itself (Hamidi & Chavoshi, 2018).

The second research question is about student' perception of Duolingo as a motivation tool to increase their motivation for learning English. After conducting the answers from participants, the result showed the students gave different perceptions based on their experience in using Duolingo.

Many students give more positive perceptions than negative perceptions. 43,75 % of students agree that Duolingo encourages them to spend more time learning English outside of the classroom. 62.5 % of students agree that Duolingo can bring many opportunities for them to learn English. 75 % of students agree that Duolingo encourages them to learn English independently. 37,5 % of students strongly agree that Duolingo can help them improve their English. 43,75 % of students agree that Duolingo makes English learning more enjoyable and interesting. And 43,5 % of students agree that it is more fun to practice English using Duolingo.

Based on the percentage it can conclude that Duolingo as a motivation tool can increase their motivation for learning Huynh, et al (2018) stated that it can be understood as Duolingo is a gamification application, which means that students use game elements to create enjoyment points in the learning environment.

Furthermore, Habibi (2020) also found that the process of learning and teaching in this era is inseparable from technology. There are many benefits of the use of technology in learning especially

in the time efficiency and also the energy or effort in learning. These facilities as found in Duolingo improve the curiosity and motivation to learn more and more. Enhancing motivation seems one of the keys to learning English effectively. The easiness and less-effort of learning have attracted the learner's attention and they seem to agree that learning English nowadays can be done by using something unique, something new, and something interesting to get student's attention. Not only that, if the students have gotten their motivation in learning, it can be the problem solution for the teacher also. It must be really helpful for the teacher to teach and explain the materials by using Duolingo together in the classroom to be discussed or even let the student play their own Duolingo and learn independently.

The third research question is whether student perception about the aspect of language can be improved by language skills practice items on Duolingo. The result showed the students gave different perceptions based on their experience in using Duolingo and many students gave more positive perceptions. 43,75 % of students agree that they can increase their vocabularies using Duolingo. It is related to the results of Mudin (2018) which agree that Duolingo can improve students' ability to master vocabulary and make them skillful in memorizing the vocabulary. 62,5 % of students agree that they can improve listening using Duolingo. 62,5 % of students agree that they can improve their reading using Duolingo. 68,75 % of students agree that they can improve their writing using Duolingo. 43,75 % of students strongly agree that they can practice translating words and sentences using Duolingo. And 43,75 % of students strongly agree that they can learn grammar or language structure using Duolingo.

This finding has also supported several previous research findings by many researchers who are also concerned about the usefulness of the Duolingo application. Based on some of the previous research, Zheng and Fisher (2023), Redjeki and Muhajir (2021), Jiang et al (2021), Habibi (2020), and many others have agreed that the use of Duolingo in English learning has supported the student's higher achievements in learning English. It means the skills of the English learners such as reading, listening, writing, and speaking must be improved after using this application in the learning process as the learning tool.

Moreover, Irzawati (2023) concludes numerous benefits of using Duolingo for its users, especially in terms of their skill, such as: exposing the learners to the numerous vocabulary enrichment, enabling the learners to identify and apply various types of sentence structures that promote better understanding and mastery of grammar, trains the learner to sharpen their language skills (writing, speaking, listening and reading) by completing the exercises in Duolingo, encourages the users to be more active by providing the opportunities to compete with other users or learners, provides some fun and interesting learning atmosphere by using gamification concept which is really give the positive impact of influence in upgrading their skill in learning English.

## 6. Conclusion

Based on the findings and discussion of this study, the result showed that a lot of students gave positive perceptions of their experience using Duolingo. This study found those students agree that Duolingo is useful and helpful and it also brings motivational benefits for students in English learning. They are interested in learning by using Duolingo and they can easily master the fourth language skills (speaking, reading, writing, and listening) and even practice their English in their daily life at home and also at school. Duolingo provides many functions and usefulness for students as an English learning application. Moreover, the use of Duolingo can help students learn English actively with interesting methods and make the learning process more enjoyable for students and teachers.

In addition, Duolingo can also increase students' motivation to learn English at a higher level. Duolingo also improves students' understanding of several aspects of language including grammar

and vocabulary because there are several aspects of the language that are improved by using Duolingo. The students showed that the positive aspects of the Duolingo application can give a lot of benefits to them. Therefore, the use of Duolingo application needs to be applied in English learning to help students improve their language learning abilities.

Students are now experiencing the use of technology which is new for some of them. It needs a lot of attention for the teacher to provide and observe and guide them in using this application appropriately to make the teaching-learning process more interesting and effective. So, it can be concluded that students have a positive impact on the use of the Duolingo application in learning English Independently.

## 7. Recommendation

After conducting data analysis using questionnaires, this study proposes some suggestions that will be useful for English language students, teachers, schools, and main targets who are interested in researching relevant issues. For students, they can use Duolingo to motivate and facilitate them in the process of learning English, such as to help them know the vocabulary, understand the material in English as well as help them to memorize the meaning of vocabulary, pronunciation of words, and their translation. In addition, students do not learn by using textbooks in their schools only, but they can use language learning applications to help them learn easily and improve their English at home or anywhere.

Regarding English teachers, this study suggests that using Duolingo as a language learning application is very useful in learning English because Duolingo can motivate and provide good improvement to students. Students need interesting and fun learning. Thus, the students can practice their English in class properly. Schools can also use Duolingo as a form of supporting the school's digitalization program from the Ministry of Education and Culture.

The researcher can recommend this application to be used in the classroom or learning language out of the classroom or independently because this application can be used every time and everywhere. The sense of competition in Duolingo also gives another great sensation for the learner in learning English by using Duolingo. The challenges in every step of Duolingo can influence the students as the users of this application to be more competitive and more enthusiastic to keep continuing every step in this English learning application.

On the other hand, there are still many limitations in this study. It is hoped that future research can investigate this issue with a larger sample. This study only focuses on the perceptions of students who are currently or have used Duolingo in their English learning. Maybe other researchers will give the implementation of Duolingo to many students.

## References

Amalia, Dina. 2019. The Effect of Duolingo on The Students' Achievement in Vocabulary Muhammadiyah University of East Sumatra, Medan.

Apuke, Oberiri, Destiny. 2017. Quantitative Research Methods: A Synopsis Approach.

Chun, D., Smith, B., & Kern, R. 2016. Technology in Language Use, Language Teaching and Language Learning. Modern Language Journals, 100, 64-80. https://doi.org/10.1111/modl.12302

Habibi, A. 2020. Duolingo as an Educational Language tool to Enhance EFL Students' motivation in Learning. British: Jurnal Bahasa dan Sastra Inggris?, 9(1), 13-26.

Hamidi, H, & Chavoshi, A. 2018. Analysis of the Essential Factors for the adoption of Mobile Learning in Higher Education: A Case Study of Students of the University of Technology: Telematics and Informatics. https://doi.org.10.1016/j.tele.2017.09.016.

Halverson, R., & Smith, A. 2009. How new technology have (and have not) changed teaching and learning in schools. Journal of Computing in Teacher Education, 26(2),49-54

Huynh, D., Lida, H., & Zuo, L. 2018. Analyzing Gamification of "Duolingo" with Focus on Its Course Structure.

Springer International Publishing.

Inayah, Nurul., Yusuf, Qismullah., & Fibula, Nurul, 2020. Exploring Undergraduate Student        Perception Toward the Use of Duolingo in Learning English. Humanities & Social Sciences Reviews, 8(3), 76-85.

Irzawati, Ira. 2023. The Integration of Duolingo into EFL Learning: ESTEEM: Journal of English Studiy Programme, 6(1). 2.

Islam, M,. R,. & Mazumder, T,. A. 2010. Mobile application and its global impact.        International Journal of Engineering & Technology. 10(6). 104-111.

Jiang, X., et.al. 2021. Evaluating the Reading and Listening Outcomes of Beginning-level Duolingo Courses. Foreign Language Annals, 54, 974-1002.

Lan, Y., F & Sie, Y.S. 2010. Using RSS to Support Mobile Learning based on Media Richness Theory. Computers and Education: 55(2), 723-732. https://doi.org/10.1016/j.compedu.2010.03.005

Mindog, E., 2016. Apps and EFL: A case study on the use smartphone apps to learn English by four Japanese University student. JALT CALL Journal. 12 (1), 3-22.

Muddin, Addal. 2018. The use of Duolingo to improve students' vocabulary. Universitas Islam Negeri Ar-Raniry, Banda Aceh, Indonesia.

Muhammad, A. F. K., et al. 2019. Benefits and challenges of using game-based formative assessment among undergraduate students. Humanities and Social Science Reviews, 7(4), 203-213.

Munday, P. 2016. The case for using        DUOLINGO as part of the language classroom experience (duolingo como parte del curriculum de las de lengua extranjera). Revista Iberoamericana De Educacion a Distancia , 19(1). 83-101.

Perez, L.,c.,d. 2020. English Language Acquisition via Duolingo Application: Effectivity and Challenges. Lingua Pedagogia: Journal of English Teaching Studies, 2(2), 76-87

Redjeki, I., S., & Muhajir, R. 2021. Gamification in EFL Classroom to Support Teaching and Learning in 21st century. Journal of Educators Society, 6(1), 58-78.

Rustipa, K. 2015. The Principles of Language Learning. Dimika Budaya & Ilmu Budaya. 10(1), 60-66.

Ryder, R & Machajewski, S. 2017. The UIC German game app for the enchancement of  foreign language learning: Case Study. International Journal of Education Technology, 4(1), 1-16.

Sarkol, K. 2016. Student perception of learning english in senior high school of Kaimana, West Papua. Sanata Dharma University, Yogyakarta, Indonesia.

Shortt, M., et.,al. 2021. Gamification in mobile-assisted language learning: A Systematic Review of Duolingo Literature from public release of 2012 to early 2020. Computer Assisted Language Learning, 1-34

Utami, Dezza. Yuanda. 2020. Student perception on The Use of Duolingo as a Language        Learning Application for Learning English. Universitas Islam negeri Ar-Rayyah,        Banda Aceh.

Vesselinove, R., & Grego, J. 2012. Duolingo effectiveness study. City University of New York, USA.

Wilbert, J.K, et al. Duolingo as a Bilingual Leaning App: A Case Study. Journal of Knowledge Management. 2(2). 1-18. https://doi.org/10.1016/j.cya.2015.11.011.

Zheng C, & Fisher, L. 2023. Opening the "b;ack box": how out-of class use of Duolingo impacts Chinese Junior High School students' intrinsic motivation for English. ECNU Review of Education, 1-25. DOI: 10.1177/20965311231171606 journals.sagepub.com/home/roe