


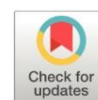


## Duolingo app in the development of oral comprehension

### *Aplicación duolingo en el desarrollo de la comprensión oral*

- <sup>1</sup> Carla Stephanie Valladares Segovia  <https://orcid.org/0000-0002-0292-611X>  
Maestría en Pedagogía del Inglés como Lengua Extranjera, Pontificia Universidad Católica del Ecuador, Ambato, Ecuador; Docente de la Escuela Superior Politécnica de Chimborazo, ESPOCH, Riobamba, Ecuador.  
[carla.valladares@esepoch.edu.ec](mailto:carla.valladares@esepoch.edu.ec)
- <sup>2</sup> Evelyn Amanda Pérez Sigcha  <https://orcid.org/0009-0002-8180-3667>  
Maestría en Pedagogía de los Idiomas Nacionales y Extranjeros mención en Enseñanza de Inglés, Universidad Casa Grande, Guayaquil Ecuador, Docente de la Escuela Superior Politécnica de Chimborazo, ESPOCH, Riobamba, Ecuador.  
[evelyn.perezs@epoch.edu.ec](mailto:evelyn.perezs@epoch.edu.ec)
- <sup>3</sup> Carlos Alberto Aguirre Alarcón  <https://orcid.org/0009-0006-6059-0913>  
Maestría en Pedagogía del Inglés como Lengua Extranjera, Pontificia Universidad Católica del Ecuador, Ambato, Ecuador; Docente de la Escuela Superior Politécnica de Chimborazo, ESPOCH, Riobamba, Ecuador.  
[carlos.aguirrea@epoch.edu.ec](mailto:carlos.aguirrea@epoch.edu.ec)



#### Artículo de Investigación Científica y Tecnológica

Enviado: 06/07/2023

Revisado: 18/08/2023

Aceptado: 28/09/2023

Publicado: 30/10/2023

DOI: <https://doi.org/10.33262/exploradordigital.v7i4.2729>

Cítese: Valladares Segovia, C. S., Pérez Sigcha, E. A., & Aguirre Alarcón, C. A. (2023). Duolingo app in the development of oral comprehension. Explorador Digital, 7(4), 19-33. <https://doi.org/10.33262/exploradordigital.v7i4.2729> }



EXPLORADOR DIGITAL, es una revista electrónica, trimestral, que se publicará en soporte electrónico tiene como misión contribuir a la formación de profesionales competentes con visión humanística y crítica que sean capaces de exponer sus resultados investigativos y científicos en la misma medida que se promueva mediante su intervención cambios positivos en la sociedad. <https://exploradordigital.org>  
La revista es editada por la Editorial Ciencia Digital (Editorial de prestigio registrada en la Cámara Ecuatoriana de Libro con No de Afiliación 663) [www.celibro.org.ec](http://www.celibro.org.ec)

Esta revista está protegida bajo una licencia Creative Commons Atribución-NoComercial-CompartirIgual 4.0 International. Copia de la licencia: <https://creativecommons.org/licenses/by-nc-sa/4.0/deed.es>

**Palabras clave:**

Duolingo, gamificación, comprensión oral, sub-destrezas, micro destrezas, componentes paralingüísticos.

**Keywords:**

Duolingo, gamification, oral comprehension, subskills, micro skills, paralinguistic components.

**Resumen**

**Introducción:** La siguiente investigación demuestra que hoy en día existen tecnologías de información y comunicación altamente desarrolladas disponibles. Por esta razón, hacer uso del e-learning y el aprendizaje en línea en las instituciones educativas parece ser una necesidad fundamental. **Objetivos:** El estudio tiene como finalidad determinar el uso de la aplicación Duolingo en la comprensión oral de los estudiantes del centro de idiomas de la Universidad UNIANDÉS. El artículo explica sobre la implementación de aplicaciones y como dichas actividades de gamificación ha inducido y motivado a generar nuevas habilidades de aprendizaje, lo cual facilita la comprensión oral de los estudiantes. Se ha analizado que, a través de audios, juegos, videos e imágenes multimedia, desarrolla el estilo y contexto de aprendizaje. **Metodología:** El proyecto tiene un enfoque cualitativo- cuantitativo dentro de un nivel descriptivo-explicativo, ya que está basada en datos reales. Los instrumentos de la investigación son una encuesta, la prueba estándar First Certificate in English (FCE) para establecer el nivel de comprensión oral que poseen los estudiantes y un post-test (FCE) con el fin de analizar cómo influye la aplicación en el desempeño de los estudiantes en dicha habilidad. **Resultados:** Después de analizar e interpretar los resultados, se identificó el nivel de inglés de los estudiantes de cuarto nivel para sugerir el uso de Duolingo a fin de potenciar la comprensión auditiva. **Conclusiones:** Como resultado es el desarrollo de un manual de actividades que incluye Duolingo con la intención de generar actividades innovadoras orientadas a fomentar mejores niveles de comprensión oral entre los estudiantes. **Área de estudio:** Educación Lingüística.

**Abstract**

**Introduction:** The following research shows that today there are advanced information and communication technologies available. For this reason, making use of e-learning and online learning in educational institutions seems to be a fundamental necessity. **Objectives:** The study aims to determine the use of the Duolingo application in the oral comprehension of the students of the language center of UNIANDÉS University. The article explains about the implementation of applications and

---

how such gamification activities have induced and motivated to generate new learning skills, which facilitates the oral comprehension of students. It has been analyzed that, through audios, games, videos, and multimedia images, it develops the learning style and context. **Methodology:** The project has a qualitative-quantitative approach within a descriptive-explanatory level since it is based on real data. The research instruments are a survey, the standard First Certificate in English (FCE) test to establish the students' level of listening comprehension and a post-test (FCE) to analyze how the application influences the students' performance in this skill. **Results:** After analyzing and interpreting the results, the English level of fourth level students was identified to suggest the use of Duolingo to enhance listening comprehension. **Conclusions:** As a result, is the development of an activity manual that includes Duolingo with the intention of generating innovative activities aimed at fostering better levels of listening comprehension among students. **Area of study:** Linguistic Education.

---

## Introduction

Teaching languages requires time and dedication, where the teacher looks for the most appropriate methodology to grow the four language skills (speaking, listening, reading, and writing), and thus prevents the learning process from becoming tedious for students. Romero & Camacho (2018), mention that the English language, “has become the most widespread language around the globe” (p. 500). The use of technology has become a critical tool for human beings if it is used objectively. This research intends to evaluate the Duolingo language-learning platform as a pedagogic source to increase students listening skills because it permits the acquisition of new knowledge, optimal feedback, easy-to-use environments, and motivation to achieve learning objectives. In addition, the contribution of several theories is of great relevance for this study since it allows to build a theoretical framework that will help analyze the necessary and convenient aspects that will be used to achieve the targets proposed (González, 2018). Children, youth, and adults have adopted using computers, mobile and electronic devices to do tasks and activities daily from home, schools, universities, and jobs. According to Mantiri (2014), in his journal he mentions that this phenomenon is thanks to the development of telecommunications, the expansion of networks, the Internet, science, and technology in

general. Currently, the teaching and learning process is influenced using these technologies in educational institutions. Learning has been adapting to hybrid models where face-to-face classes are complemented with activities on digital platforms, managed by the teachers themselves, or with activities developed in virtual classrooms.

In Ecuador, there is still a low level of reference to the English language, and one of the reasons is that students in colleges and universities prove that there are a series of difficulties in the student learning process in different language English skills, especially in oral comprehension; in numerous cases, the techniques used by teachers are inadequate or less efficient and do not achieve their mission, which is the integrated learning of the student to increase their interest in English (Hossain, 2016).

According to a study in 2022 by Education First (EF, 2022), regarding the command of the English language, Ecuador is ranked 82nd out of 111 countries, which places the country within unsatisfactory standards. It is evident that the English language teaching-learning process in the land is deficient and that the skills of writing, speaking, reading, listening does not achieve the objective desired.

The purpose of this study is to determine the use of Duolingo on students' learning outcomes. This research is important because it is expected that the use of Duolingo will help improve students' oral prehension and if used optimally will have satisfactory results. In addition, this application can be used with or without an Internet network and can be installed on an Android phone, IOS or home computer, so students can study anywhere and anytime. In addition, students can measure their own English skills, because Duolingo includes an assessment recap, selects the level according to the skill and they can see the daily learning progress.

Teachers can also monitor the performance of their students by simply opening a phone anywhere and anytime, it can also save learning time. Duolingo is one of the most widely used language learning applications in the world. It can be used as a learning medium because it includes four components of language skills, namely reading, writing, listening, and speaking (Borja, 2018). The use of media is aimed at learning in the same way to facilitate and help learners to understand learning material in depth and in its entirety. The learning media used in language learning is based on research findings Mianmahaleh & Rahimy (2015), state that technological media can unite various elements to convey the material so that it can meet the learning needs of learners who have different cognitive abilities.

For instance, Jaskova (2014) in her thesis entitled Duolingo as a New Language-Learning Website and its contribution to E-Learning Education from Masaryk University-Czech Republic, is mainly focused on the new language learning portal Duolingo, describes its

methodology and learning system and concludes that Duolingo is a beneficial learning portal, which has a skillfully crafted learning system, as well as motivational aspects.

Likewise, Ye (2014) found that Duolingo English Test scores were linked with TOEFL total scores since comparable scores from the two tests had similar percentile ranks. Duolingo English Test scores are on a scale of 0–100 and TOEFL scores are on a scale of 0–120. For international students to apply to study in US universities, the minimum cutoff score of TOEFL iBT is 80 and a more selective cut score is 100, corresponding to scores 50 and 72, respectively, on the Duolingo English Test.

Furthermore, all these investigations provide a theoretical framework for the present research since it allows to identify the theories that report the issue and to have them as references for this pedagogical study related to oral comprehension acquisition.

#### *Educational Application or Platform*

According to Rosenberg (2022) an educational app is a multimedia resource or material that is used as a technical support tool in the field of education is the main objective of teaching and self-learning. The online application for free language learning "Duolingo" founded by Luis von Ahn was invented together with his graduate student Severin Hacker. The current team of developers now consists of twenty-seven people, including software engineers and language experts, being currently one of the most used platforms worldwide.

Another point is, Duolingo is a free platform without advertisements that contains several units and lessons that last approximately five minutes. The lessons presented in this application are focused on the English skills of words or phrases translation and repetition. Duolingo is defined as a free language learning application that offers twenty-five complete language courses for English speakers (Murdoch, 2017). Additionally, the application has courses for speakers of languages other than English some of the languages are French for Portuguese speakers, English for Czech speakers, English for Spanish speakers, and so on.

#### *Oral Comprehension*

This ability is also known as listening skills and plays an essential part in teaching-learning the English language; what is more, it allows for the development of other skills such as speaking, reading, and writing (Brown, 2013). Previously, these skills were taught because each skill fulfilled a different objective; the starting point was to teach the grammar to develop listening and thus to speak. The most recommended and effective is to focus on real communication situations and develop each skill by combining them.

The definition for oral comprehension has been a subject of discussion, and many authors of books, articles, etc., do not find an appropriate meaning for it. One of the first definitions is that of Wifp (1984), in the article "Strategies for Teaching Second Language Listening Comprehension", referring to listening as an invisible mental process, which makes it difficult to describe (p. 345). Listeners must discriminate between different sounds, understand the vocabulary and grammatical structures, interpret emphasis, retain, and interpret all of this within the immediate context.

On the other hand, Rost (2002) focuses on today's world and defines oral comprehension as receiving what the speaker expresses (the receptive orientation); building and representing the meaning (the constructive direction); negotiate the meaning among others and responding (the collaborative exposure); and creating sense through participation, imagination, and empathy (the transformative direction) (p. 20).

### Methodology

In the present investigation, was used the qualitative and quantitative approaches. The study was conducted in the CTT language center in Riobamba-Ecuador with the participation of thirty-one students (15 women and 16 men) during classes. The investigation design was pre-experimental, whereby a pre and post-test were applied before and after the intervention phase to each student.

Indeed, to collect the data for this study, it was essential to survey the independent variable "Duolingo" using the Likert scale, which allowed us to know if the application within the learning process facilitated language acquisition both in listening and in the other skills. This instrument specifies the purpose of conducting the investigation and the instructions.

The second instrument to consider was a standard test (FCE) applied to fourth-level students to find out the reality in terms of oral comprehension of the English language. This information allowed to anticipate the problem and establish the Duolingo application as extra help to the student in the learning process.

The data collection of this study consisted of three stages: pretest, intervention, and posttest. For data processing, tabulation in the SPSS computer program was used, which facilitated the reliability and validation of the data of the applied instruments. Several statistical and reliability tables were obtained an Excel program was used to get the graphs of each of the questions in the survey and the standard FCE test. Finally, the analysis and interpretation of the results were reached where the default values of each statistical table are considered, considering the contents of the theoretical framework, guiding questions, objectives, and the matrix of variables.

## Results and Discussion

### *Validation, analysis and evaluation of the intervention stage and posttest*

The recent investigation that took place in “*CTT de los Andes*”, Language Center applied a research design with a pre-experimental pretest/posttest to one group of students that were in fourth level with a B1 level of English, with the purpose to measure participants English oral comprehension proficiency, and a collective questionnaire that consisted of fourteen Likert type items used to assess students’ perceptions about gamification activities used in class. First, all the participants were tested before and after the intervention phase to measure their oral comprehension based on a B1 standard FCE listening exam.

Participants were also surveyed through a collective questionnaire to get qualitative data about their previous knowledge about gamification used in class. Subsequently, you can observe the quantitative analysis of the results that were processed employing the Statistical Package for the Social Sciences (SPSS), through the implementation of the non-parametric Wilcoxon signed-rank test that according to Gentle (2003), is used to compare two repeated means repeated measurements on a single sample.

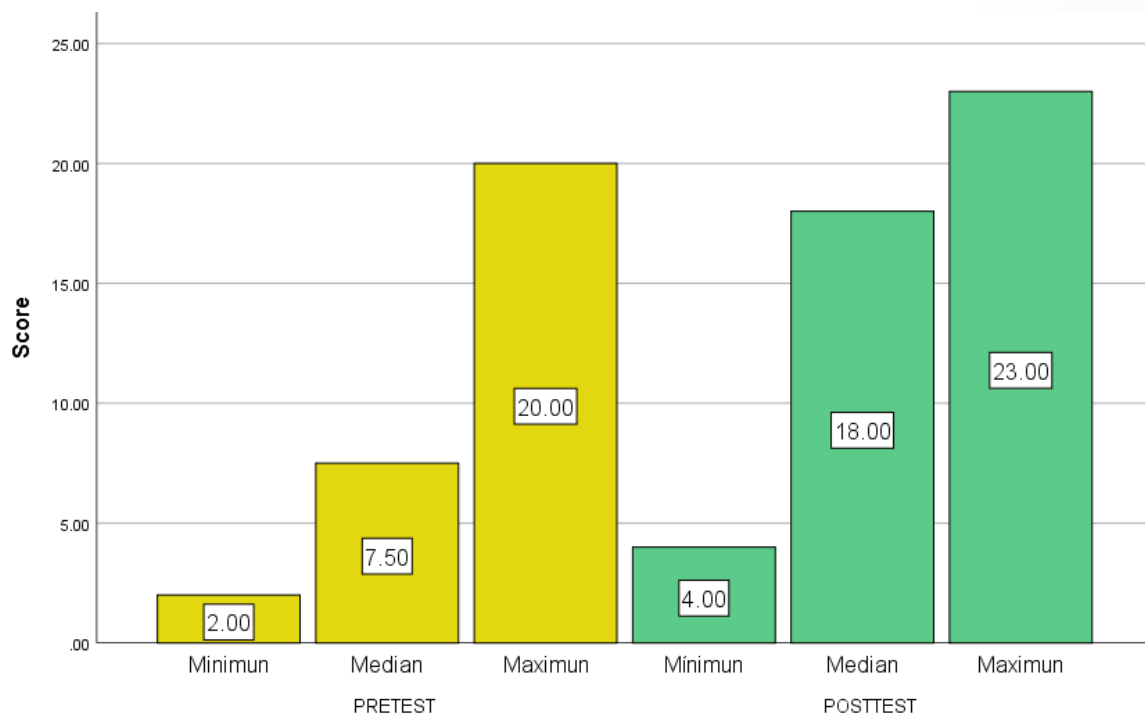
### *Descriptive statistics analysis*

Descriptive statistics of the results obtained by the students in the pretest and their development after the training, reflected in the posttest grades, were analyzed in a general way. The bar graph defines that the star score in the pretest was 7.50 points, the lowest score obtained was two points while the highest was 20 points, out of 25. In the posttest, the star score was eighteen points, while the minimum score was 4 points, while the highest score was 23 points, out of 25 possible.

It was determined that the listening scores of the fourth level students in the pretest were low, represented in the statistics of lower minimum, median, and maximum values compared to the results after implementing the Duolingo tool, and the training gave students. Therefore, the central scores of the median are more than doubled, and the values of minimum and maximum scores are even increased, descriptively demonstrating the effectiveness of the use of the app with the activities used in class that will be included in the manual.

**Figure 1**

*Descriptive statistics of the Pretest and Posttest qualifications*



*Data normality*

As a first instance, to define the performance of the grades of the 4th level students in the pretest and the posttest, it was necessary to analyze the probability distribution that they possess, since, if they were to be distributed with the ordinary probability law, you should use parametric tests for comparison; otherwise, non-parametric tests will be used.

**Table 1**

*Normality tests*

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistical	Gl	Sig.	Statistical	gl	Sig.
Pretest	.246	20	.003	.852	20	.006
Posttest	.167	20	.147	.874	20	.014

a. Lilliefors significance correction

In the Shapiro Wilk normality test, a p-value of 0.06 is calculated in the pretest scores, and a p-value of 0.014 for the posttest scores, both values lower than a significance level  $\alpha = 0.05$ . The null hypothesis is rejected when  $p\text{-value} < \alpha$ , and the alternative hypothesis is taken as true. According to the results of Table 7, a Shapiro Wilks normality test was performed on both scores, determining p values less than the level of significance set for



the trial. For this reason, it can be concluded that the pretest and posttest scores are not distributed with an average probability law. Since one of the two grade samples does not have a normal distribution of the data, the comparison must be made using the nonparametric Wilcoxon rank tests.

**Table 2**

*Wilcoxon Rank Test*

		N	Average Range	Sum of Ranks	Statistical
Posttest - Pretest	Negatives Ranks	2 <sup>a</sup>	4.50	9.00	T = 9.00
	Positive Ranks	17 <sup>b</sup>	10.65	181.00	
	Draw	1 <sup>c</sup>			
	Total	20*			

a. Posttest < Pretest

b. Posttest > Pretest

c. Posttest = Pretest

\*Critical Value with 0.05 significance  $T_{\alpha(20)} = 61$ ;  $T_{\alpha/2(20)} = 53$

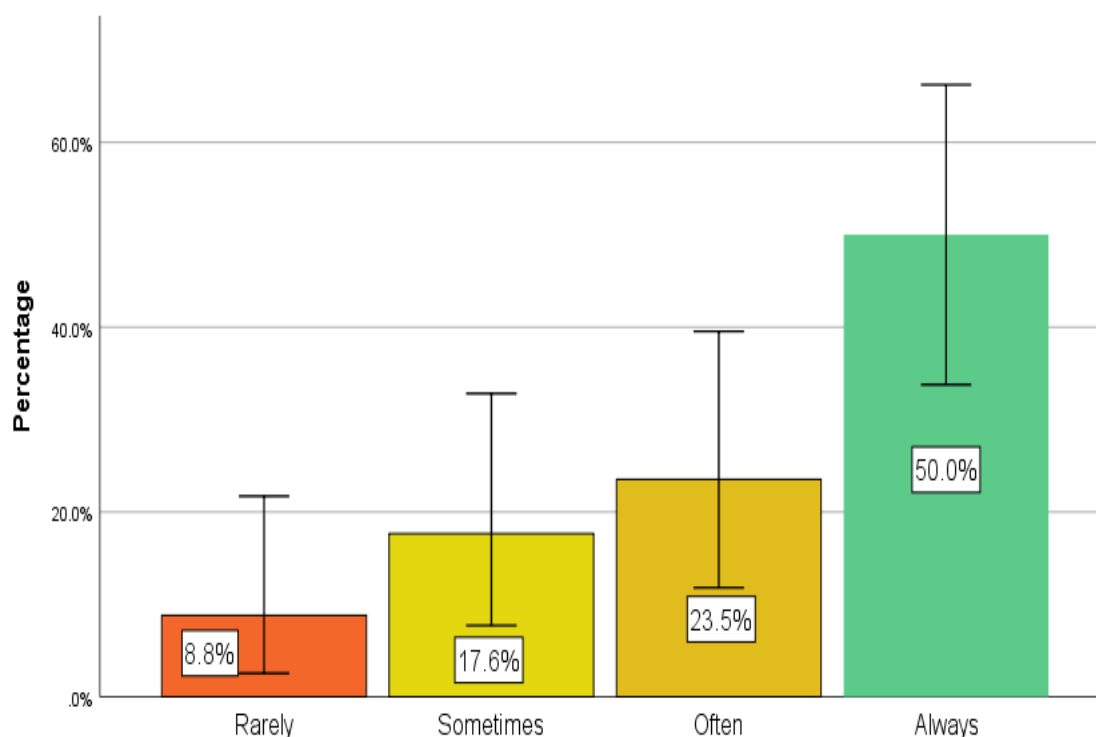
The Wilcoxon T statistic is made up of the smaller the ranges, whether positive or negative; the statistic  $T = 9$ . In this case, the decision is based on the Wilcoxon table of critical values, which defines  $T_{\alpha(20)} = 61$  for unilateral tests of 20 degrees of freedom (individuals) and 0.05 of significance, and for these same parameters, but for bilateral tests at  $T_{\alpha/2(20)} = 53$ . The null hypothesis is rejected when  $T < T_{\alpha/2(20)} = 53$  in bilateral contrast, and  $T < T_{\alpha(20)} = 61$  for unilateral difference; in these cases, the alternative hypothesis is taken as accurate. In table 8, the Wilcoxon statistic is calculated according to a two-sided test, having a statistic smaller than the tabulated critical value. The rejection of the null hypothesis is defined, which indicates, as the first trait, that there is no equality between the pretest and post-test scores.

Subsequently, a unilateral contrast was performed to determine if the post-test had better result than those obtained in the pretest. On this occasion, the critical value is again lower than the statistical one, so it can be statistically concluded that the post-test scores improved or increased compared to the pretest.

*Collective questionnaire results analysis*

**Figure 2**

*The teachers use gamification technique for listening comprehension*



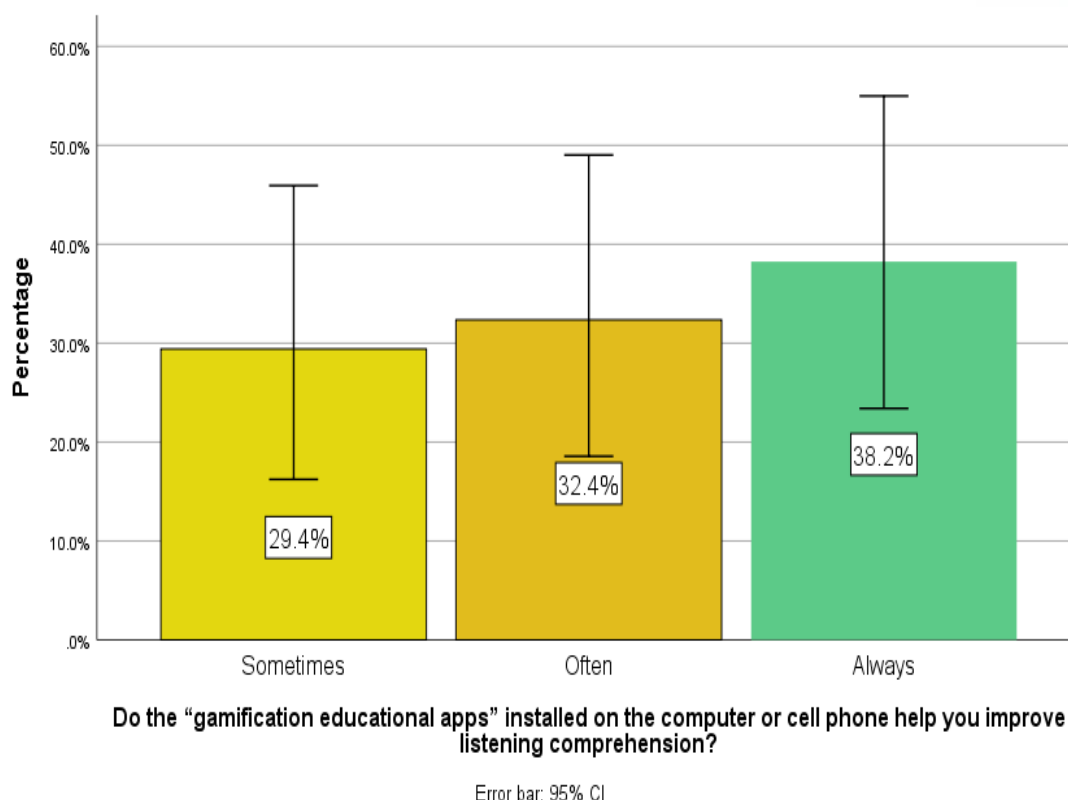
**The technique gamification, which facilitates learning English, specifically learning listening comprehension, is used by your teacher on a regular basis.**

Error bar: 95% CI

It shows that 50% of fourth level students consider that the teacher always uses gamification techniques for listening comprehension learning, while 23.5% say that it is used often. According to fourth level students, most students mention that gamification techniques are used often or always for listening comprehension learning, while about a quarter of students consider that these are sometimes or rarely used techniques in a way suitable for listening comprehension learning.

**Figure 3**

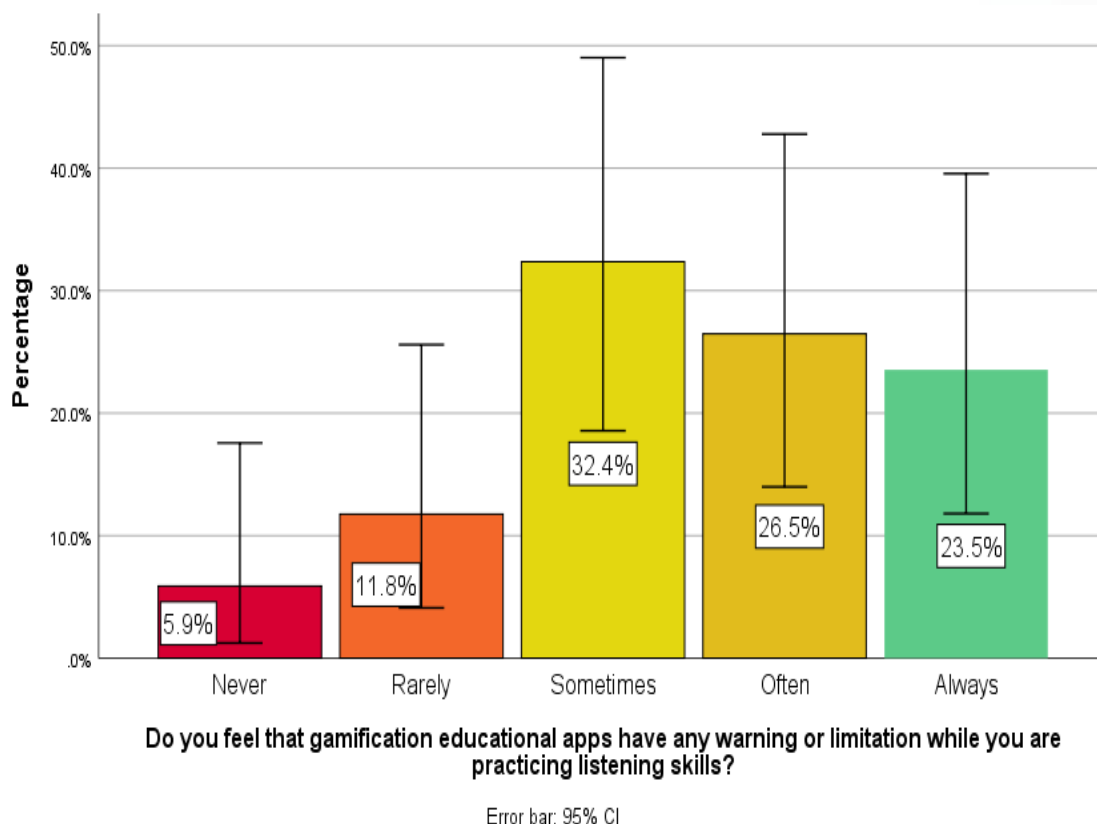
*Computer or cell phone gamification educational apps used for improving listening comprehension*



It shows that 38.2% of fourth level students consider that having educational gamification applications installed either on phones or computers always helps to improve listening comprehension, while 32.4% consider that it helps often and 29.4% sometimes helps. More than half of the students consider that at least often it is beneficial for them to have it installed on their computer or cell phone, to improve their listening comprehension of the language, and very few consider that it only sometimes works.

**Figure 4**

*Warning or limitation of gamification educational apps*



The picture shows that 32.4% consider that sometimes educational gamification applications have warnings or limitations when putting into practice listening skills of the language. 26.5% consider that they often have limitations, and 23.5% indicate that they always have risks or limitations. Slightly more than half of the students consider that there are often or always limitations or warnings when putting listening skills into practice in applications, this may be due to information privacy reasons or even lack of contact with a person when using the application. Very few students consider that these limitations never or rarely occur.

**Conclusion**

- The present research study summarized the Duolingo app for the development of the ability of listening of the English language among students of the fourth level of the CTT Language Center. The literature claims that Duolingo is a platform where students progress through various levels. Furthermore, covers the areas of oral expression, listening comprehension, grammar, and vocabulary necessary to learn because units are included to contribute to the enrichment of the topics in

institutional curricular planning. In addition, it was established that most of the students in the fourth level obtained an A2 and B1 level on the standard test (FCE), which means a low level of listening comprehension. However, students do not have the B1 level that the curriculum of the career suggests as a base in the semester. The results obtained with pre, and posttest show that the activities presented through the intervention phase helped in the development of oral comprehension thanks to the motivation and methodology that Duolingo uses when teaching a language as it is the listening function, which played a very important role in the process of learning and developing this English skill.

### Conflict of interest

Authors must declare whether there is a conflict of interest in relation to the submitted article.

### References

- Borja, X. (2018). *Duolingo Language- Learning Platform and the English Vocabulary Acquisition in Students of the Third Year of Bachillerato at Unidad Educativa Primero de Abril* [Masters tesis, Universidad Técnica de Ambato]. Ambato, Ecuador. <https://n9.cl/hg1aw>
- Brown, H. D. (2013). *Teaching by Principles an Interactive Approach to Language Pedagogy* (2nd ed.). Pearson Education. <https://n9.cl/v405b>
- Education First [EF]. (2022). El ranking mundial más grande según su dominio del inglés. <https://www.ef.com.ec/epi/>
- Gentle, J. (2003). *Random Number Generation and Monte Carlo Methods*. (Vol. 2). New York: Springer. <https://n9.cl/e5112k>
- González, P. (2018). *Duolingo como recurso didáctico para mejorar el proceso de aprendizaje del idioma inglés en los estudiantes del quinto grado en la escuela Miguel Riofrío periodo septiembre 2017- junio 2018* [Doctoral tesis, Universidad de Loja, Ecuador]. <https://n9.cl/ltohg>
- Hossain, M. (2016). English Language Teaching in Rural Areas: A scenario and Problems and Prospects in context of Bangladesh. *Advances in Language and Literary Studies*, 7(3), 1-12. <https://n9.cl/66jxa>
- Jaskova, V. (2014). *Duolingo as a New Language-Learning Website and its Contribution to e-learning Education*. [Diploma thesis, Masaryk University]. Bernardino, Czech Republic. <https://n9.cl/4p5yo>

- Mantiri F. (2014). Multimedia and Technology in Learning. *Universal Journal of Educational Research*, 2 (9):591. <https://n9.cl/73tex>
- Mianmahaleh, S., A. & Rahimy, R. (2015). An investigation of the listening comprehension strategies used by Iranian EFL learners. *International Journal of Applied Linguistics & English Literature*, 4 (1), 255-260. <https://n9.cl/axl45>
- Murdoch, A. (2017). Duolingo Review: Can You Become Fluent with the Popular Language Learning App? *Fluent in 3 months*. <https://n9.cl/hbl4d>
- Romero Villarroel, W., & Camacho Estrada, S. (2018). The use of standardized English exams in the internationalization of English as a global language. *Ciencia Digital*, 2(2), 497-510. <https://doi.org/10.33262/cienciadigital.v2i2.115>
- Rosenberg, M. (2002). E-learning: Strategies for delivering knowledge in the digital age. doi:10.1002/pfi.4140410512
- Rost, M. (2002). *Teaching and Researching Listening*. Great Britain: Longman. <https://n9.cl/7mw47>
- Wifp, J. (1984). Strategies for Teaching Second Language Listening Comprehension. *Foreign Language Annals*, 4(17), 345. doi:10.1111/j.1944-9720
- Ye, F. (2014). Validity, Reliability, and Concordance of the Duolingo English Test. University of Pittsburgh. <https://n9.cl/e4wbu>

El artículo que se publica es de exclusiva responsabilidad de los autores y no necesariamente reflejan el pensamiento de la **Revista Explorador Digital**.



El artículo queda en propiedad de la revista y, por tanto, su publicación parcial y/o total en otro medio tiene que ser autorizado por el director de la **Revista Explorador Digital**.



#### Indexaciones

