Effectiveness of online platforms in developing language skills of higher education students

La eficacia de las plataformas online para el desarrollo de las competencias lingüísticas de los estudiantes universitarios

Kateryna Kravchenko
Candidate of Pedagogical Sciences, Lecturer at the Chair of Vocational Education and Technologies according to the Profiles, Faculty of Engineering and Pedagogical Education, Pavlo Tychyna Uman State Pedagogical University, Ukraine.
https://orcid.org/0000-0001-9914-4765
k.a.kravchenko@udpu.edu.ua
ResearcherID: HGB-2226-2022

Uliana Ketsyk-Zinchenko
Candidate of Pedagogical Sciences, Associate Professor, Department of Foreign Languages, Vasyl Stefanyk Precarpathian National University, Ukraine.
https://orcid.org/0000-0002-3173-3392
uliana.ketsyk@pnu.edu.ua
ResearcherID: HKW-8823-2023

Iryna Suduk
Candidate of Philological Sciences, Associate Professor, Department of Philology and Translation, Institute of Humanities and Public Administration, Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine.
https://orcid.org/0000-0002-0058-9041
sudukiryna@ukr.net
ResearcherID: ODJ-8027-2025

Svitlana Nykyporets
Senior Lecturer, Department of Foreign Languages, Faculty of Civil and Environmental Engineering, Vinnytsia National Technical University, Ukraine.
https://orcid.org/0000-0002-3546-1734
fotinia606@gmail.com
ResearcherID: NXX-6308-2025

Viktoriia Cherednychenko
Candidate of Philological Sciences, Senior Lecturer, Department of Translation, Faculty of Philology, Admiral Makarov National University of Shipbuilding, Ukraine.
https://orcid.org/0000-0002-1605-8042
chevika13@gmail.com
ResearcherID: NLN-9935-2025

Abstract

The purpose of this study is to determine the effectiveness of using online platforms, including Duolingo, Babbel, and Moodle, in developing various English language skills of students. A controlled experimental design was used. Based on a purposeful sample, 180 students were included in the study and divided into an experimental group (using online platforms (n=90)) and a control group (studying using the traditional system (n=90)). The

Effectiveness of online platforms in developing language skills of higher education students. - Eduweb, 2025, julio-septiembre, v.19, n.3. / 303-314

303

experiment lasted a total of 12 weeks. Students' performance was assessed using standardized pre- and post-tests that consisted of reading, listening, writing, speaking, vocabulary, and grammar tasks. Statistical analysis included paired and independent t-tests and calculation of the effect size. All online platforms provided improvement in language skills compared to the control group. The effect sizes mostly exceeded 0.8. This indicator demonstrated the practical significance of the platforms. Thus, the findings showed that online platforms can improve the effectiveness of English language learning in higher education institutions. Each platform has its advantages, which confirms the feasibility of blended learning.

Keywords: Duolingo, English language skills, Moodle, Babbel, online platforms.

Resumen

El objetivo de este estudio es determinar la eficacia del uso de las plataformas en línea Duolingo, Babbel y Moodle para desarrollar diversas habilidades lingüísticas en inglés en los estudiantes. Se utilizó un diseño experimental controlado. A partir de una muestra intencional, se incluyó en el estudio a 180 estudiantes, que se dividieron en un grupo experimental (que utilizó plataformas en línea, n = 90) y un grupo de control (que estudió utilizando el sistema tradicional, n = 90). El experimento duró 12 semanas en total. El rendimiento de los estudiantes se evaluó mediante pruebas estandarizadas previas y posteriores que consistían en tareas de lectura, comprensión auditiva, expresión escrita, expresión oral y vocabulario. El análisis estadístico incluyó pruebas t pareadas e independientes y el cálculo del tamaño del efecto. Todas las plataformas en línea proporcionaron una mejora en las habilidades lingüísticas en comparación con el grupo de control. El tamaño del efecto superó en su mayoría el 0,8. Este indicador demostró la importancia práctica de las plataformas. Así, los resultados mostraron que las plataformas en línea pueden mejorar la eficacia del aprendizaje del inglés en las instituciones de educación superior. Cada plataforma tiene sus ventajas, lo que confirma la viabilidad del aprendizaje mixto.

Palabras clave: Duolingo, habilidades lingüísticas en inglés, Moodle, Babbel, plataformas en línea.

Introduction

Technological progress and the proliferation of digital resources have transformed existing traditional teaching methods. Flexible, interactive, and personalized language learning has become a common phenomenon in modern universities (Sushant et al., 2024). In Ukraine, the relevance of implementing online platforms has particularly increased against the backdrop of the COVID-19 pandemic and subsequently the full-scale war (Turchyn et al., 2023;). Besides, online learning has become important due to the current reforms in the field of education, which involve the active digitalization of the learning process. Despite the widespread implementation of online tools, there is a need for an objective assessment of their effectiveness in developing key language skills: speaking, writing, reading, and listening, compared to traditional teaching methods. The problem of the correctness of modern online platforms for students' performance in language acquisition is of particular scientific interest.

Besides, despite the current popularity of platforms such as Duolingo, Moodle, Quizlet, and others, there is a limited number of empirical studies in the scientific discourse (Hidalgo-Camacho et al., 2021; Kurebay et al., 2023) that focus on the impact of these resources on language competence, specifically among Ukrainian university students. Additionally, many studies focus on the use of online platforms in secondary education, as this is the environment where digital gamification is actively employed (Bazyl et al., 2025; Stanley & Fortunato, 2022). Thus, there is a significant gap in the study of their actual effectiveness within the modern higher education system.

This study aims to determine the effectiveness of online platforms in improving language skills among students in Ukrainian higher education institutions who are learning English as a foreign language.

The main tasks include:

1. Determining the level of language skills before and after the experiment based on a standardized language test.
2. Conducting an experimental verification of the effectiveness of using online platforms in the process of developing students' language skills.
3. Formulating recommendations on the feasibility of integrating online platforms into the educational process for English language teachers in higher education institutions in Ukraine.

The following hypotheses are put forward:

H1. Students who systematically use online platforms for language learning demonstrate a higher level of improvement in their language skills compared to those who study using traditional methods.
H2. Different platforms have varying effectiveness in developing specific language skills (Duolingo for listening, Moodle for reading and writing).

The study's scope encompasses university students in Ukraine who are learning English as a foreign language, with a focus on the use of platforms such as Duolingo, Moodle, and other popular digital resources.

Literature Review

The use of modern online platforms for learning foreign languages (e.g., Duolingo, Coursera, specialized LMS, and other mobile applications) has combined several key features: the application of gamification (a set scoring system, levels, badges), adaptive learning (personalized exercises based on user behavior methods), certain aspects of multimedia content (audio, video, interactive exercises), effective spaced repetition systems, as well as progress analytics and real-time feedback. These functions theoretically allow the implementation of modern methodological principles by increasing the frequency of contact with language material, lowering barriers to daily practice, and enabling the individualization of the learning pace (Essafi et al., 2024). The development of practical implementations of adaptive algorithms and memory models (e.g., spaced repetition models) has demonstrated the effectiveness of such approaches for subsequent improvement of memorization, vocabulary expansion, and identification of weaknesses in students' preparation.

A significant number of studies have shown the positive impact of online tools on individual components of language competence (Andino Paredes et al., 2025; Escobar Fandiño et al., 2019). First and foremost, it's worth noting aspects such as vocabulary memorization, motivation, and accessibility of learning (Martínez-Cerdá et al., 2018). For example, in some empirical studies, the use of Duolingo and other similar applications has led to an increase in learners' vocabulary and overall motivation, especially when the applications were used as a supplement to classroom instruction (Solmaz, 2024; Remache Carrillo et al., 2021). Researchers also noted that spaced repetition systems and adaptive tasks significantly increased the duration of lexical units retained in memory (Ludwig et al., 2023). Along with the positive results, researchers have repeatedly pointed out existing limitations: many platforms can be effectively used in the areas of reading/vocabulary/grammar, but they have weak capabilities for developing oral communication (free speech, intonation, real interaction with native speakers). Scientists have also noted that automated exercises do not always develop comprehensive communication skills and require teacher facilitation and integration with live practices (Kessler et al., 2023; Ferri et al., 2020). Furthermore, there were issues in the areas of differentiated access (the digital divide), the quality of educational content, and long-term effectiveness (Okoye et al., 2022; Wen & Hu, 2018). The proposed challenges were also explored in Ukraine. A review of Ukrainian scientific literature demonstrated an increase in the number of works on distance and online language learning in higher education settings, primarily in the form of case studies, student surveys, and descriptive studies of e-learning usage. Ukrainian research has documented the significant role of digital platforms in ensuring the continuity of learning during the pandemic and military actions. Positive student feedback on the flexibility and accessibility of online tools was also noted. Besides,

Effectiveness of online platforms in developing language skills of higher education students. - Eduweb, 2025, julio-septiembre, v.19, n.3. / 303-314

305

difficulties with integrating speaking practice and technical/organizational barriers have been identified (Pylypenko & Kozub, 2021). For example, research analyzing the use of e-learning in higher education and case studies of distance learning English/other languages in Ukrainian universities have demonstrated the high effectiveness of this approach.

Despite the existing descriptive and quasi-experimental studies, there is still a lack of clearly controlled experimental research comparing the effectiveness of specific online platforms and traditional face-to-face methods of working with learners (Nicolalde González et al., 2025; De Wit & Altbach, 2020), including those regarding higher education students in Ukraine. Many existing publications (primarily Ukrainian ones) are case studies, surveys, or mixed research designs. Therefore, there is a lack of sufficient research with strong quantitative data (e.g., pre/post-tests with control groups, long-term retention analysis) to draw definitive conclusions about the advantages or disadvantages of online platforms in higher education, specifically within the Ukrainian context. These and other gaps justified the need for further experimental comparisons, particularly focusing on the development of oral speech and the integration of platforms into credit-module programs.

At the same time, the problem of the effectiveness of digital resources in teaching foreign languages is not only local, but also global. Despite the fact that this proboematics is actively researched in the countries of the European Union, the USA and Asia, the results remain ambiguous. Thus, the Ukrainian experience, conditioned by the challenges of war and active educational reforms, can make a significant contribution to the international scientific discourse. The results obtained will have practical significance not only for domestic higher education institutions, but also for the educational systems of other countries that integrate digital platforms or operate in conditions of crisis transformations.

For the proposed empirical study, several theoretical approaches can be combined, including Krashen's Input Hypothesis and Vygotsky's Zone of Proximal Development. The first of these allowed us to emphasize the importance of well-supported, understandable input material. The use of the second shifted the focus to social interaction and support. The combination of these theoretical approaches opened up the possibility of explaining the potential of certain platform features (adaptability, frequent repetition, feedback, simulation of communicative contexts).

Methodology

Research design

This study is a controlled experimental study that involves comparing the performance of an experimental group (students using online platforms for language learning) and a control group (students learning using traditional methods). This approach is suitable for establishing a causal link between the use of online platforms and the improvement of language skills, as it allows the isolation of the independent variable's (teaching method) influence on the dependent variable (language proficiency results).

Participants

The study involved 180 students aged 18 to 25 who were studying for a degree in Philology (English Language). All participants were 2nd and 3rd-year full-time students for whom studying English is a mandatory part of the curriculum. The inclusion sampling was purposeful and involved considering the following criteria:

1. According to the Common European Framework of Reference for Languages, one should be able to speak English at the B1–B2 level. (CEFR). The level was confirmed using an entrance test adapted to the domestic assessment system and validated.
2. The age category is from 18 to 25 years old, meaning undergraduate students. This allowed us to ensure a relative homogeneity of the sample in terms.

3. Voluntary written consent to participate in the study.

Distribution Procedure: After passing the entrance test, all participants were divided into two groups equal in number (90 people in each): An experimental group that used online platforms to study English. A control group that studied using traditional methods.

As a result, two representative segments of students were formed, which allowed for the generalization of the results within the target audience.

Procedure

The study lasted 12 weeks. Initially, a pre-test was conducted, which involved taking a standardized language test to determine the initial level. The test included reading, grammar, vocabulary, listening, and writing tasks, which provided comprehensive coverage of the key language skills necessary for a reliable diagnosis of the B1–B2 level.

To increase the validity of the test, content and design principles were followed. Specifically, the test tasks were created based on descriptive CEFR scales that cover specific language actions characteristic of levels B1–B2. The test was compared with the results of international exams, including the TOEFL ITP and Cambridge Preliminary/First (PET/FCE), based on previous studies that used similar assessment scales. The authors used Cronbach's alpha coefficient to check how reliable the test was. It was 0.87, which means that the test tasks were very consistent with each other. Testing was conducted under standardized conditions, the same for all participants, which minimized the influence of external factors on the results. Based on the pilot results, tasks with a low discrimination index were eliminated, and instructions were adapted to improve clarity. Thus, the entrance test used can be considered a reliable instrument.

During the intervention phase, the experimental group (EG) used online platforms for 2-3 hours per week and actively completed various exercises in vocabulary, grammar, reading, listening, and interactive dialogs. The main online platforms became Duolingo, Babbel, and Moodle (the university's LMS). These platforms were chosen for their interactivity, gamification, wide range of language exercises (listening, reading, vocabulary, dialogs), easy accessibility, and the ability to track learning progress. The control group (CG) attended traditional in-person classes with the same weekly workload. Students in the control group used textbooks (English File B1/B2, Grammar in Use), printed materials, lectures, and in-class sessions with the instructor. The next step was post-testing. After 12 weeks, both groups took the same language test again. The main data was collected based on the results of pre- and post-intervention tests, as well as through activity log files on online platforms (for the experimental group).

Data analysis

Statistical methods were used for data analysis. The authors used a paired t-test to look at the outcomes of the tests before and after for each group. It was used an independent t-test to look at the average results between the experimental and control groups. The analysis was performed using SPSS software (version XX) with a statistical level of $p < 0.05$. The study also used the comparison method to correlate the obtained data with the results of other scientists.

Ethical Considerations

In this study, all participants were informed about the purpose of the study and gave their voluntary written consent to participate. Besides, the study adhered to the principles of anonymity and confidentiality of personal data. The study was approved by the university's ethics committee by current Ukrainian legislation.

Effectiveness of online platforms in developing language skills of higher education students. - Eduweb, 2025, julio-septiembre, v.19, n.3. / 303-314

307

Results and Discussion

The first stage of the study aimed to define the level of English proficiency among the participants before and after using different teaching methods: online platforms in the experimental group (EG) and traditional methods in the control group (CG). The maximum score for the test was 100. Before the experiment began, the normality of the data allocation was tested using the Shapiro-Wilk test. The results showed that all the data obtained had a standard distribution ($p > 0.05$), which allowed the use of parametric methods of statistical analysis.

In both groups (90 people each), the initial average results were statistically similar. This further indicates the homogeneity of the sample and provides grounds for a subsequent correct comparison of the results. After 12 weeks of training, noteworthy improvement was observed in all participants, but the experimental group using online platforms (Duolingo, Babbel, Moodle) showed a higher growth rate. Specifically, the average score of the EG before testing was 62.4, and after – 77.1. Moreover, in the CG, it was 61.9 (before testing) and 69.8 (after testing).

Table 1.
Dynamics of average scores in the EG and CG before and after intervention

Group	Test	M (medium)	SD	Min	Max
Experimental	Before experiment	62,4	6,7	48	76
	After	77,1	6,2	65	89
Control	Before experiment	61,9	7,1	46	75
	After	69,8	6,5	58	82

Thus, the overall gain was +14.7 points in the EG and +7.9 points in the CG. To assess the determination of changes within each group, a paired t-test was applied. All changes were found to be statistically meaningful ($p < 0.001$). However, the Cohen's d values showed that the intervention effect was much more pronounced in the experimental group:

Table 2.
Paired t-test results to assess changes within each group

Group	t (df=89)	p-value	Cohen's d (effect)
Experimental	17,41	< 0,001	1,83
Control	10,52	< 0,001	1,11

To calculate the difference between the two groups after the intervention, the independent samples t-test was used, the results of which confirmed a statistically meaningful advantage of the EG: $t(178) = 7.48$, $p < 0.001$, Cohen's d=1.11. This means that using online platforms is highly effective compared to traditional methods. A detailed analysis of individual language competencies showed that the EG considerably upgraded their listening (+3.9) and reading skills (+3.8). At the same time, in the control group, the increase in these indicators was +2.3 and +1.9, respectively (See Table 3).

Table 3.
Changes in indicators of language competences in the EG and CG

Skill	Group	Pre (M±SD)	Post (M±SD)	Increase	t	p
Reading	Experimental	15,3 ± 2,1	19,1 ± 1,8	+3,8	12,7	< 0,001
	Control	15,2 ± 2,2	17,1 ± 2,0	+1,9	7,1	< 0,001
Listening	Experimental	14,6 ± 2,3	18,5 ± 1,9	+3,9	13,9	< 0,001
	Control	14,4 ± 2,4	16,7 ± 2,1	+2,3	8,3	< 0,001
Writing	Experimental	16,0 ± 2,4	18,2 ± 2,2	+2,2	9,4	< 0,001
	Control	15,8 ± 2,6	17,1 ± 2,3	+1,3	5,5	< 0,001
Speaking	Experimental	16,5 ± 2,5	18,6 ± 2,1	+2,1	8,9	< 0,001
	Control	16,3 ± 2,4	17,3 ± 2,3	+1,0	4,2	< 0,001

Thus, the experimental group showed higher results, especially in receptive activities (reading and listening), which could be attributed to the gamified format of presenting the material, access to authentic resources, and the frequency of repetition at home.

To assess the efficiency of individual online resources in the process of language skills development, the experimental group (n = 90) was divided into 3 subgroups of 30 people each, with each subgroup working with a different platform: Subgroup A – Duolingo; Subgroup B – Babbel; Subgroup C – Moodle. All students studied for 7 weeks and spent 2–3 hours per week working with the platform.

The initial level of reading skills in all three subgroups is about 15 points. Moodle showed the greatest increase: +4.4 points, Cohen's d effect 1.10. Babbel has an average increase (+3.6 points), and Duolingo – the smallest (+3.1 points). Thus, Moodle is the most effective for developing reading skills. All three platforms showed a good increase in listening; however, Duolingo leads with +4.2 points and d = 1.08.

For developing writing, it is worth using Babbel (+2.9 points, d = 0.93). Moodle also showed a result (+2.7), while Duolingo only showed +2.0 points (d = 0.67 — average effect). Babbel contains structured exercises on sentence construction and grammar usage, which are especially effective for writing. Babbel is also important for developing speaking skills (+2.5 points, d = 0.88). For vocabulary development, the best app is Duolingo (+4.5 points, d = 1.25). This is the highest score in the table overall.

Table 4.
Developing Language Skills with the Help of Online Platforms (Pre / Post / ΔM / d).

Skill	Platform	Pre	Post	Increase (Δ M)	Cohen's d
Reading	Duolingo	15,0	18,1	3,1	0,82
	Babbel	14,8	18,4	3,6	0,91
	Moodle	15,2	19,6	**4,4**	**1,10**
Listening	Duolingo	14,4	18,3	3,9	1,00
	Babbel	14,5	18,2	3,7	0,94
	Moodle	14,6	18,8	**4,2**	**1,08**
Writing	Duolingo	16,1	18,1	2,0	0,67
	Babbel	15,8	18,7	**2,9**	**0,93**
	Moodle	16,0	18,7	2,7	0,86
Speaking	Duolingo	16,4	18,1	1,7	0,61
	Babbel	16,3	18,8	**2,5**	**0,88**
	Moodle	16,5	18,6	2,1	0,75
Vocabulary	Duolingo	14,8	19,3	**4,5**	**1,25**
	Babbel	14,9	18,3	3,4	0,87
	Moodle	15,1	19,0	3,9	1,00
Grammar	Duolingo	15,5	18,7	3,2	0,90
	Babbel	15,2	19,3	**4,1**	**1,18**
	Moodle	15,4	19,3	3,9	1,09
Average score	Duolingo	91,0 (all)	104,2	+13,2	1,64
	Babbel	91,3	106,0	+14,7	1,76
	Moodle	91,8	**108,0**	**+16,2**	**1,89**

Thus, Moodle showed a high overall gain: +16.2 points, effect size d = 1.89. At the same time, Babbel also scores high (+14.7, d = 1.76). Ultimately, Duolingo is effective for developing vocabulary skills. The overall platform growth is +13.2, d = 1.64. Table 3 shows the summary scores for all skills.

Effectiveness of online platforms in developing language skills of higher education students. - Eduweb, 2025, julio-septiembre, v.19, n.3. / 303-314

309

Table 5.
Online Platform Effectiveness by Language Skills with Cohen's d

Language skills	Duolingo Δ M ± SD Cohen's d	Babbel Δ M ± SD Cohen's d	Moodle Δ M ± SD Cohen's d	The most effective platform
Reading	3,1 ± 1,2 0,82	3,6 ± 1,3 0,91	4,4 ± 1,1 1,10	Moodle
Listening	4,2 ± 1,2 1,08	3,7 ± 1,5 0,94	3,9 ± 1,3 1,00	Moodle
Writing	2,0 ± 1,1 0,67	2,9 ± 1,2 0,93	2,7 ± 1,4 0,86	Babbel
Speaking	1,7 ± 1,2 0,61	2,5 ± 1,3 0,88	2,1 ± 1,4 0,75	Babbel
Vocabulary	4,5 ± 1,0 1,25	3,4 ± 1,2 0,87	3,9 ± 1,1 1,00	Duolingo
Grammar	3,2 ± 1,1 0,90	4,1 ± 1,0 1,18	3,9 ± 1,1 1,09	Babbel
Average gain	13,2 ± 5,8 1,64	14,7 ± 6,0 1,76	16,2 ± 5,5 1,89	Moodle

Note: Interpretation of Cohen's d: < 0.5 - weak effect; 0.5–0.8 - medium; > 0.8 - strong effect; > 1.0 - very strong effect (practically significant).

Thus, in the modern educational environment, the use of online platforms for learning foreign languages has become not only a widespread phenomenon but also a necessity. This transformation was largely driven by technological progress.

The central problem of the research was to determine the influence of modern platforms on the development of different components of language competence. The results obtained clearly showed the advantage of using online platforms in the language learning process. All three tested platforms – Duolingo, Babbel, and Moodle – contributed to a significant improvement in students' language proficiency over 12 weeks of learning. The total increase in results across all skills was: Duolingo +13.2; Babbel +14.7; Moodle +16.2. The highest progress was observed in vocabulary, reading, and listening skills, which confirms the potential of digital tools in working with receptive language skills. The high effect sizes (Cohen's d) are particularly indicative, ranging from 0.82 to 1.25 for individual skills, which suggests a practically significant impact of the platforms on learning outcomes. The results obtained correlate with a number of recent studies that also highlight the effectiveness of digital learning (Báez et al., 2019; Ramírez-Castañeda, 2020). Specifically, modern authors who have researched the effectiveness of Duolingo have found that daily practice on the platform corresponds to a semester of a university course, particularly in terms of vocabulary and listening comprehension (Hassan et al., 2022; Loewen et al., 2019; Piller & Bodis, 2022). Similar to our study, Duolingo was found to be extremely effective in developing passive vocabulary and grammatical structures. Other scholars have pointed out that platforms using gamification increase motivation but often don't cover productive skills like writing and speaking in sufficient depth (Hackett et al., 2023; Bezanilla et al., 2019). This is completely consistent with our results: Duolingo showed the lowest gains in these two categories (Peláez-Sánchez & Velásquez-Durán, 2023). Instead, other studies have highlighted the importance of using the LMS Moodle in philological training (Gamage et al., 2022; Roy et al., 2018). Specifically, the authors demonstrated the effectiveness of this resource for developing academic writing and reading, which is confirmed in this work (Remache Carrillo et al., 2022; Maican & Cocoradă, 2021). Moodle allows for the integration of authentic texts, writing assignments, and the instructor's feedback (Criollo-C et al., 2022; De Prada et al., 2022). This is important for understanding a foreign language. Regarding the Babbel platform, several studies have highlighted its advantages in developing structured speaking, thanks to its conversational exercises and systematic presentation of grammar (Dorner & Cervantes-Soon, 2020; Seitenova et al., 2023). In this study, Babbel demonstrated the best results in writing, speaking, and grammar formation, which confirms the findings of other authors.

Overall, the analysis of the results allowed us to conclude that the effectiveness of online platforms depends not only on the duration of use but also on the content methodology, task structure, and level of interactivity. Therefore, the study's findings supported the first hypothesis. In both the overall results and the distribution across individual language skills, students in the EG showed statistically significantly higher gains than participants in the control group who were learning from classical textbooks. Additionally, the effect sizes within the range of 0.86–1.25 confirm the practical significance of the changes. Thus, it can be stated that the systematic use of online resources truly enhances the effectiveness of language learning. However, the second hypothesis is partially confirmed. It was expected that Duolingo would be important for developing listening skills, but this platform has become important for vocabulary development. On the other hand, Moodle confirmed its advantage in reading ($\Delta M = 4.4$; $d = 1.10$); That is, although the overall trend is confirmed, different platforms have different effects on individual language skills (Esnaola-Arribillaga & Bezanilla, 2020). Thus, the actual distribution of efficiency differs somewhat from the predicted one. It is particularly important that Babbel proved to be significant in developing productive skills (speaking, writing), while Moodle was important for receptive skills (reading, listening).

Therefore, the obtained results have significant practical implications for English language teachers, methodologists, and educational program leaders. They allow the rational selection of digital platforms depending on the didactic goals. Additionally, the results highlight the feasibility of using a combined approach to platforms.

Despite the compelling results obtained, the interpretation of the study's results should consider certain limitations. Specifically, the limited intervention period (12 months) did not allow the assessment of the long-term impact of using online platforms. Perhaps some skills, particularly productive ones (speaking, writing), take longer to show significant changes. Additionally, motivational factors were not controlled in the study. These limitations do not diminish the value of the data obtained, but they do indicate the need for further research with a longer training period.

The study has practical implications for teachers. Specifically, the results show that online platforms can be integrated into curricula not as an addition, but as a full-fledged part of the learning process. Additionally, it's worth using a combined approach, for example, Duolingo for vocabulary practice between classes, Moodle for written homework assignments, and Babbel for individual preparation for oral presentations. Additionally, tasks from platforms should be adapted to the modern curriculum of higher education institutions. Instructors should facilitate students' work with the platforms and provide feedback. Besides, in the future, software developers should improve various components of productive skills training, specifically by implementing speaking modules with automatic voice recognition and feedback and expanding the possibilities for open-ended writing that can be checked manually or with AI.

Conclusions

Therefore, the study recognized the importance of using online platforms (Duolingo, Babbel, Moodle) in developing the language skills of students in Ukrainian universities. The experimental results showed that online platforms contribute to the improvement of all types of language activity, especially listening, reading, and vocabulary. Moodle platform showed the highest results, although Duolingo proved to be the most effective in vocabulary development, and Babbel in forming productive skills (writing and speaking). The hypothesis about the overall effectiveness of online learning (H1) was fully confirmed, while the hypothesis about differences between platforms (H2) was partially confirmed. This research is of significant value for both Ukrainian higher education and the international system of foreign language teaching, as it provides empirical evidence supporting the implementation of online platforms in the educational process in Ukrainian HEIs and identifies the specific effects of individual platforms on different language skills, allowing better adaptation of digital tools to learning objectives. Based on the results obtained, it is advisable to propose specific directions for practical implementation. Specifically, universities should integrate online platforms into foreign language courses, not as supplementary resources, but as key components of the learning process. Additionally, platforms with advanced audio-visual and interactive features, such as Moodle and Babbel, are worth using for practicing

Effectiveness of online platforms in developing language skills of higher education students. - Eduweb, 2025, julio-septiembre, v.19, n.3. / 303-314

311

academic reading, writing, and listening. Duolingo should be used for individual vocabulary review and automating grammatical structures, especially at the beginner and intermediate levels. Further research aims to expand the sample by including students from different majors and levels of training. It's also worth implementing longer intervention periods (more than one semester). This will allow an assessment of the stability and long-term impact of the platforms.

Bibliographic references

Andino Paredes, M. B. M., Calle Calle, Z. V., Siza Maisincho, T. E., Pujota Chango, J. P., Díaz Guamán, M. E., & Saltos Espín, V. E. (2025). Mobile Learning Application to Strengthen English Communicative Competencies in Ecuadorian High School Students. *Revista Multidisciplinar de Estudios Generales*, *4*(2), 556 – 572. https://doi.org/10.70577/reg.v4i2.109

Báez, J. C., Marquart, M., Chung, R. Y.-E., Ryan, D., & Garay, K. (2019). Developing and Supporting Faculty Training for Online Social Work Education: The Columbia University School of Social Work Online Pedagogy Institute. *Journal of Teaching in Social Work*, *39*(4-5), 505–518. https://doi.org/10.1080/08841233.2019.1653419

Bazyl, O., Abilova, O., Karpenko, O., Mierienkov, H., & Poliakova, A. (2025). Assessing the impact of artificial intelligence integration on educational processes in higher education institutions of Ukraine and Kazakhstan. *Sustainable Engineering and Innovation*, 7(1), 97–116. https://doi.org/10.37868/sei.v7i1.id418

Bezanilla, M. J., Fernández-Nogueira, D., Poblete, M., & Galindo-Domínguez, H. (2019). Methodologies for teaching-learning critical thinking in higher education: The teacher's view. *Thinking Skills and Creativity*, *33*, 100584. https://doi.org/10.1016/j.tsc.2019.100584

Criollo-C, S., Guerrero-Arias, A., Vidal, J., Jaramillo-Alcazar, Á., & Luján-Mora, S. (2022). A Hybrid Methodology to Improve Speaking Skills in English Language Learning Using Mobile Applications. *Applied Sciences*, *12*(18), 9311. https://doi.org/10.3390/app12189311

De Prada, E., Mareque, M., & Pino-Juste, M. (2022). Teamwork skills in higher education: is university training contributing to their mastery? *Psicologia: Reflexão e Crítica*, *35*(1). https://doi.org/10.1186/s41155-022-00207-1

De Wit, H., & Altbach, P. G. (2020). Internationalization in higher education: global trends and recommendations for its future. *Policy Reviews in Higher Education*, *5*(1), 1–19. https://doi.org/10.1080/23322969.2020.1820898

Dorner, L. M., & Cervantes-Soon, C. G. (2020). Equity for Students Learning English in Dual Language Bilingual Education: Persistent Challenges and Promising Practices. *TESOL Quarterly*, *54*(3), 535–547. https://doi.org/10.1002/tesq.599

Escobar Fandiño, F. G., Muñoz, L. D., & Silva Velandia, A. J. (2019). Motivation and E-Learning English as a foreign language: A qualitative study. *Heliyon*, *5*(9), e02394. https://doi.org/10.1016/j.heliyon.2019.e02394

Esnaola-Arribillaga, I., & Bezanilla, M. J. (2020). Levels of Moodle Use to Support University Face-to-Face Teaching. *IEEE Revista Iberoamericana de Tecnologias del Aprendizaje*, *15*(3), 129–137. https://doi.org/10.1109/rita.2020.3008376

Essafi, M., Belfakir, L., & Moubtassime, M. (2024). Investigating Mobile-Assisted Language Learning Apps: Babbel, Memrise, and Duolingo as a Case Study. *Journal of Curriculum and Teaching*, *13*(2), 197-215. https://doi.org/10.5430/jct.v13n2p197

Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations. *Societies*, *10*(4), 1-18. https://doi.org/10.3390/soc10040086

Gamage, K. A. A., Gamage, A., & Dehideniya, S. C. P. (2022). Online and Hybrid Teaching and Learning: Enhance Effective Student Engagement and Experience. *Education Sciences*, *12*(10), 1-13. https://doi.org/10.3390/educsci12100651

Hackett, S., Janssen, J., Beach, P., Perreault, M., Beelen, J., & van Tartwijk, J. (2023). The effectiveness of Collaborative Online International Learning (COIL) on intercultural competence development in
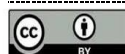
higher education. *International Journal of Educational Technology in Higher Education*, *20*(1), 1-21. https://doi.org/10.1186/s41239-022-00373-3

Hassan, J., Devi, A., & Ray, B. (2022). Virtual Laboratories in Tertiary Education: Case Study Analysis by Learning Theories. *Education Sciences*, *12*(8), 1-15. https://doi.org/10.3390/educsci12080554

Hidalgo-Camacho, C., Isabel, G., Villacís, W., & Varela, K. (2021). The Effects of Online Learning on EFL Students' Academic Achievement during Coronavirus Disease Pandemic. *European Journal of Educational Research*, *10*(4), 1867–1879. https://doi.org/10.12973/eu-jer.10.4.1867

Kessler, M., Loewen, S., & Gönülal, T. (2023). Mobile-assisted language learning with Babbel and Duolingo: comparing L2 learning gains and user experience. *Computer Assisted Language Learning*, *38*(4), 690–714. https://doi.org/10.1080/09588221.2023.2215294

Kurebay, B., Seitenova, S., Khassanova, I., Kazetova, A., Bayukanskaya, S., & Mailybaeva, G. (2023). Competence of primary school teachers in the use of internet resources. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 11*(4), 964-980. https://doi.org/10.46328/ijemst.3466

Loewen, S., Crowther, D., Isbell, D. R., Kim, K. M., Maloney, J., Miller, Z. F., & Rawal, H. (2019). Mobile-assisted language learning: A Duolingo case study. *ReCALL*, *31*(3), 293–311. https://doi.org/10.1017/s0958344019000065

Ludwig, C., Malcolm, D., & Tassinari, M. G. (2023). Designing, Assessing, and Adapting Materials for Autonomous Learning. In *Developing Learner Autonomy in Foreign Language Learning: Papers from the Independent Learning Association Conference, Mexico, June 2021.* (pp. 174–186). Candlin & Mynard ePublishing Limited. https://doi.org/10.47908/29/9

Maican, M.-A., & Cocoradă, E. (2021). Online Foreign Language Learning in Higher Education and Its Correlates during the COVID-19 Pandemic. *Sustainability*, *13*(2), 781. https://doi.org/10.3390/su13020781

Martínez-Cerdá, J.-F., Torrent-Sellens, J., & González-González, I. (2018). Promoting collaborative skills in online university: comparing effects of games, mixed reality, social media, and other tools for ICT-supported pedagogical practices. *Behaviour & Information Technology*, *37*(10-11), 1055–1071. https://doi.org/10.1080/0144929x.2018.1476919

Nicolalde González, S. M., Tumbaco Vega, G. T., Ortega Robalino, M. J., & Urgilés Armendáriz, I. A. (2025). The role of Duolingo in the development of reading comprehension skills among young learners. *Boletín Científico Ideas y Voces*, *5*(1), 20-37. https://doi.org/10.60100/bciv.v5i1.195

Okoye, K., Hussein, H., Arrona-Palacios, A., Quintero, H. N., Ortega, L. O. P., Sanchez, A. L., Ortiz, E. A., Escamilla, J., & Hosseini, S. (2022). Impact of digital technologies upon teaching and learning in higher education in Latin America: an outlook on the reach, barriers, and bottlenecks. *Educ Inf Technol, 28,* 2291–2360. https://doi.org/10.1007/s10639-022-11214-1

Peláez-Sánchez, I. C., & Velásquez-Durán, A. (2023). The impact of Duolingo in developing students' linguistic competence: an aspect of communicative language competences. *Educação e Pesquisa*, *49*. https://doi.org/10.1590/s1678-4634202349252467eng

Piller, I., & Bodis, A. (2022). Marking and unmarking the (non)native speaker through English language proficiency requirements for university admission. *Language in Society*, *53*(1), 1–23. https://doi.org/10.1017/s0047404522000689

Pylypenko, O., & Kozub, L. (2021). Foreign Language Teaching of Ukrainian University Students in a Distance Learning Environment. *Arab World English Journal*, *12*(3), 375–384. https://doi.org/10.24093/awej/vol12no3.26

Ramírez-Castañeda, V. (2020). Disadvantages in preparing and publishing scientific papers caused by the dominance of the English language in science: The case of Colombian researchers in biological sciences, *PLOS ONE*, *15*(9), Article e0238372. https://doi.org/10.1371/journal.pone.0238372

Remache Carrillo, N. M., Porras Pumalema, S. P., Campaña Días, D. C., & Garcés Villacrés, M. A. (2021). MOODLE platform as a didactic support for the English language skills improvement. *ConcienciaDigital, 4*(1.2),358-371. https://doi.org/10.33262/concienciadigital.v4i1.2.1603

Remache Carrillo, N. M., Porras Pumalema, S. P., Fierro López, D. V., & Campaña Díaz, D. C. (2022). Moodle platform forums in the English language writing skills improvement. *AlfaPublicaciones*, *4*(2.2), 56-70. https://doi.org/10.33262/ap.v4i2.2.214

Effectiveness of online platforms in developing language skills of higher education students. - Eduweb, 2025, julio-septiembre, v.19, n.3. / 303-314

313

Roy, A., Newman, A., Ellenberger, T., & Pyman, A. (2018). Outcomes of international student mobility programs: a systematic review and agenda for future research. *Studies in Higher Education*, *44*(9), 1630–1644. https://doi.org/10.1080/03075079.2018.1458222

Seitenova, S., Khassanova, I., Khabiyeva, D., Kazetova, A., Madenova, L., & Yerbolat, B. (2023). The Effect of STEM Practices on Teaching Speaking Skills in Language Lessons. *International Journal of Education in Mathematics, Science and Technology*, *11*(2), 388–406. https://doi.org/10.46328/ijemst.3060

Solmaz, O. (2024). Impacts of digital applications on emergent multilinguals' language learning experiences: the case of Duolingo. *Education and Information Technologies, 30,* 9185–9214. https://doi.org/10.1007/s10639-024-13185-x

Stanley, D., & Fortunato, Y. R. M. (2022). The efficacy of online higher education in Latin America: a systematic literature review. *IEEE Revista Iberoamericana de Tecnologias del Aprendizaje*, *1*, 262-269. https://doi.org/10.1109/rita.2022.3191299

Sushant, G., Gupta, S., & Kumar, G. (2024). Assessing the Implementation and Usability of the Duolingo Application in the Learning of Spanish among Indian Learners from Universities. *Ubiquitous Learning: An International Journal*, *17*(2), 111–129. https://doi.org/10.18848/1835-9795/cgp/v17i02/111-129

Turchyn, I., Zaitseva, S., Rudenko, N., Saienko, V., Kuzemko, N., & Denefil, O. (2023). Using distance learning models as opportunities for blended learning for foreigners. *Romanian Journal for Multidimensional Education, 15*(4), 178-191. https://doi.org/10.18662/rrem/15.4/787

Wen, W., & Hu, D. (2018). The Emergence of a Regional Education Hub: Rationales of International Students' Choice of China as the Study Destination. *Journal of Studies in International Education*, *23*(3), 303–325. https://doi.org/10.1177/1028315318797154