

Integration of Digital Language Resources into Foreign Language Teaching for Students of Non-Linguistic Degree Programmes

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Abstract: The rapid digitalization of higher education and the growing demands of the labor market have made foreign language proficiency essential for students of non-linguistic specialties. This study examines the effectiveness of integrating digital language resources into foreign language teaching at Polissia National University. The research employed a mixed-methods approach and was conducted over one academic semester with 78 students majoring in Economics, Law, Public Administration, and Accounting. Participants were divided into an experimental group and a control group. The experimental group used digital tools, including Quizlet, Google Classroom, interactive online dictionaries, and the AI-based assistant ChatGPT, while the control group followed traditional teaching methods. Data were collected through vocabulary and grammar tests, written assignments, oral presentations, questionnaires, and classroom observations. The findings indicate that students in the experimental group demonstrated significantly higher academic performance compared to the control group. Moreover, the use of digital resources enhanced students' motivation, learning autonomy, communicative competence, and critical thinking skills. The results confirm that integrating learning management systems, interactive vocabulary platforms, and AI tools improves both language proficiency and student engagement. The study contributes to research on digital pedagogy and offers practical recommendations for foreign language teachers in non-linguistic higher education.

1 INTRODUCTION

In today's globalized and multicultural world, proficiency in foreign languages (particularly English) has become an essential competence for students' professional advancement and academic development. At Polissia National University, this especially applies to non-linguistic degree programmes such as Business Economics, International Economic Relations, Law, Public Administration, Accounting, and Finance. In these fields, effective command of a foreign language facilitates international communication, provides access to scholarly sources, and enables participation in conferences as well as project-based activities.

In this context, contemporary students tend to demonstrate a high level of digital literacy and expect interactive and personalized learning approaches. While traditional teaching methods remain effective for the basic acquisition of grammar and vocabulary, they do not always adequately

address students' needs in developing communicative competence, analytical skills, and learner autonomy.

The functional roles of the digital tools in achieving learning outcomes were differentiated according to their pedagogical purpose within the instructional process. Quizlet served as a vocabulary acquisition and retention tool through spaced repetition, flashcards, and gamified practice activities that reinforced lexical knowledge. Google Classroom functioned as the organizational and communicative hub, enabling structured distribution of materials, timely feedback, assignment management, and support for collaborative learning. ChatGPT acted as an AI-assisted language support tool that facilitated sentence construction, idea formulation, and grammar self-correction during writing tasks. Interactive online dictionaries provided multimodal lexical input, including definitions, pronunciation models, visual illustrations, and contextual examples, thereby supporting autonomous vocabulary development and pronunciation accuracy. The use of

digital language resources, such as interactive dictionaries, vocabulary-learning platforms, learning management systems, and AI-based assistants makes it possible to solve several relevant pedagogical tasks simultaneously.

First and foremost, this approach contributes to increased student motivation and engagement. Secondly, this approach supports the individualization of the learning process. Thirdly, this approach expands opportunities for the development of communicative and critical skills.

Finally, and no less importantly, this approach contributes to students' preparation for professional activity. For degree programmes in Economics, Law, Public Administration, Finance, and Accounting, a high level of English proficiency constitutes a key factor in career success and effective integration into international professional environments.

Thus, the relevance of the present study is determined not only by global trends in the digitalization of education, but also by the fact that, despite extensive international research on the effectiveness of digital resources in foreign language teaching, empirical studies in Ukraine that offer a comprehensive analysis of the use of interactive platforms, AI-based assistants, and online dictionaries in the education of students of non-linguistic specializations remain limited. Accordingly, the present study aims to address this research gap by demonstrating the practical effectiveness and pedagogical benefits of integrating digital technologies into the teaching and learning process.

2 LITERATURE REVIEW

Recent studies in the field of foreign language teaching methodology confirm the high effectiveness of digital resources in the learning process. International scholars emphasize that the integration of online platforms, gamification technologies, and AI-based tools contributes to increased student motivation as well as to more effective acquisition of vocabulary and grammatical structures.

In their comprehensive review, C. Chapelle and S. Sauro emphasize that language learning technologies enable the implementation of individualized learning trajectories, allow instructional materials to be adapted to learners' proficiency levels, and provide rapid feedback. The authors place particular emphasis on interactive platforms and artificial intelligence-based resources, highlighting their potential to foster

the development of communicative competence and creativity [1].

R. Godwin-Jones highlights that digital tools such as Quizlet and online dictionaries significantly facilitate the acquisition of new vocabulary and contribute to the development of learner autonomy. In particular, the systematic repetition of lexical items through interactive flashcards enables more effective consolidation of knowledge than traditional instructional methods [2].

In his study on the use of mobile technologies in language teaching, G. Stockwell demonstrates that interactive platforms stimulate student engagement, foster the development of cognitive skills and communicative competence, and create favorable conditions for the gamification of learning, which in turn enhances learner motivation [3], [4].

The use of Google Classroom has also been recognized as effective. K. Johnson describes how learning management systems (LMS) facilitate the organization of instructional materials, enable monitoring of student progress, and support collaborative learning. These features are particularly relevant for non-linguistic degree programmes, where group work and knowledge sharing play a central role in the learning process [5].

In Ukraine, the relevance of digital resources for foreign language teaching is supported by the studies of I. Riabchenko and L. Kovalchuk. I. Riabchenko notes that interactive exercises, online dictionaries, and gamified elements significantly enhance student motivation and contribute to more effective acquisition of vocabulary and grammatical structures [6]. Drawing on research conducted with students pursuing non-linguistic degrees, L. Kovalchuk demonstrates that the use of digital platforms promotes learner autonomy, improves both written and oral skills, and fosters the development of critical thinking [7].

The literature review also indicates that the use of AI-based assistants (particularly ChatGPT) in language learning represents a relatively new yet promising research direction. Studies by international scholars demonstrate that students actively employ AI tools for generating examples, checking grammatical accuracy, and preparing written assignments, which substantially enhances the effectiveness of self-directed learning [8], [9], [10], [11], [12].

Thus, the analysis of existing literature confirms that the integration of digital resources into foreign language instruction for students in non-linguistic degree programmes is both theoretically grounded and pedagogically effective. However, within the

Ukrainian context, there remains a limited number of empirical studies that provide a comprehensive assessment of the impact of digital platforms, AI-based assistants, and interactive dictionaries on students' academic achievement and learning motivation. This gap underscores the relevance and innovative character of the present study.

3 RESEARCH METHODOLOGY

In contemporary education, the integration of digital technologies into foreign language teaching is gaining increasing significance. Empirical evidence indicates that the use of resources, such as Quizlet, significantly improves vocabulary learning outcomes, resulting in higher levels of lexical retention. Research findings also demonstrate that both students and teachers show a high degree of acceptance of and readiness to employ artificial intelligence-based tools, particularly ChatGPT. The Google Classroom platform, in turn, facilitates collaborative learning by enhancing student motivation and academic performance in English language learning. In addition, interactive online dictionaries provide access to multimodal resources (including textual definitions, pronunciation models, and visual illustrations), which expands opportunities for autonomous vocabulary acquisition.

Accordingly, the aim of the present study is to determine the extent to which the integrated use of digital language resources (Quizlet, Google Classroom, ChatGPT, and interactive online dictionaries) enhances the effectiveness of foreign language learning among students majoring in Economics, Law, and related degree programmes. The methodological framework of the study was based on an experimental-control design, which made it possible to compare traditional instruction with technology-enhanced learning.

Use of Quizlet. During English language classes, students in the experimental group regularly worked with interactive Quizlet flashcard sets containing field-specific vocabulary relevant to their fields of study, including economics, law, public administration, and accounting. Each student was able to study the flashcards individually and complete timed tests designed to assess the speed and accuracy of lexical retention. In practical classes, the educator also organized group-based competitive activities in the form of live quizzes, during which students shared their results and analyzed errors. This approach made it possible to combine individual revision with group

interaction, while fostering healthy competition and enhancing student motivation.

Use of Google Classroom. Google Classroom functioned as the primary system for course organization. Students received access to instructional materials, homework assignments, supplementary exercises, and thematic video content. Educators used the platform to review student work and deliver feedback in real time. Particular attention was given to tasks involving the use of professional terminology, such as the preparation of short analytical reports in English on topics related to economics or law. The use of Google Classroom also enabled students to plan their learning activities in advance and revise course materials at any convenient time, which significantly enhanced levels of learner autonomy and responsibility.

Use of ChatGPT. The AI-based assistant ChatGPT was employed to provide individualized support to students during the preparation of written assignments and classroom discussions. Students in the experimental group were able to obtain model formulations, check the grammatical accuracy and stylistic relevance of their texts, and generate new examples of terminology use in the context of profession-oriented tasks. Educators' observations indicated that the use of ChatGPT contributed to the development of critical thinking skills. Rather than relying solely on ready-made outputs, students learned to analyze AI-generated examples, compare them with alternative formulations, and draw independent conclusions. In addition, the AI assistant supported students in preparing oral presentations and role-play activities, which increased their confidence in using the foreign language.

Use of interactive dictionaries. Interactive dictionaries were utilised both during classroom practice and as part of homework assignments. Students had access to resources with audio pronunciation, contextualized example sentences, visual representations, and thematic illustrations. During practical classes, educators organized tasks focused on the rapid identification of word meanings, the use of their combinations in professional contexts, and interactive text-translation activities. This approach enabled effective consolidation of vocabulary, supported the development of associative thinking, and enhanced students' skills in self-control of lexical knowledge.

Integration of digital platforms into the learning process. Over the course of the term, all four digital resources were integrated into the modular structure of the course. For example, students were introduced to a new topic via Google Classroom, acquired

relevant terminology using Quizlet, and verified the accuracy and contextual use of lexical items with the support of ChatGPT and interactive dictionaries. Final practice activities were completed through online tests and pair-based tasks during practical classes. This comprehensive integration ensured a balanced combination of theoretical knowledge, practical skills, and the development of learner autonomy.

Methodology. The study was conducted over the course of one academic term and involved 78 students from Polissia National University, enrolled in the following degree programmes: Business Economics, Law, Public Administration and Management, and Accounting.

Participants were recruited through convenience sampling from intact academic groups enrolled in the selected degree programmes, with eligibility criteria including regular class attendance and comparable baseline English proficiency as determined by pre-experimental testing. To minimize selection bias, students who met these criteria were proportionally represented from each programme. Assignment to the experimental and control groups was conducted using stratified random allocation to ensure equivalence in terms of specialization, gender distribution, and initial language proficiency. This procedure enhanced the internal validity of the study by ensuring the comparability of groups prior to the intervention.

The participants were divided into two groups: an experimental group (EG) and a control group (CG), each comprising 39 students. Students from all listed degree programmes were represented proportionally in both groups. The instruction process in the experimental group (EG, n=39) was supported by an integrated set of digital language resources, whereas the control group (CG, n=39) was taught using traditional instructional methods without the use of specialized digital apps.

Within the instructional process, the EG engaged in a range of tasks supported by the following tools and resources: Quizlet (to create courses and flashcard sets for vocabulary acquisition, including gamified practice activities and thematic quizzes aligned with each instructional unit); Google Classroom (the central platform for organizing course materials, distributing, collecting, and assessing assignments); ChatGPT (an AI-based assistant to support the preparation of written tasks, generate example sentences, and assist with grammar correction); interactive online dictionaries with audio pronunciation and visual illustrations (to expand learners' vocabulary, support pronunciation self-

monitoring, and provide contextualized examples of word usage).

The experiment was conducted throughout the entire term, with regular classroom instruction maintained in both groups. However, the EG systematically completed additional activities using digital platforms, whereas the CG performed comparable lexical and grammatical tasks in a traditional format, including printed materials, conventional dictionaries, and communicative exercises without the use of the specified online resources. This design ensured a clear basis for comparison, as the only variable distinguishing the two groups was the integration of digital technologies. The methodological framework also included ongoing monitoring of both groups' progress through monthly tests, as well as the collection of participant feedback via questionnaires. The alignment of test tasks and the evaluation of students' language proficiency were conducted according to identical criteria for both groups.

Data collection instruments and methods. To evaluate the effectiveness, both quantitative and qualitative research methods were employed. Foreign language proficiency was assessed through pre- and post-experimental testing, which included structured tests measuring lexical knowledge, grammatical accuracy, and reading comprehension. Identical tests were used for both the EG and the CG. Academic performance was further analyzed by comparing the average term grades (final exam or pass/fail assessment) of students in the EG and CG. In addition, questionnaires and surveys were used to collect students' perceptions of digital resource use, focusing on motivation, learning satisfaction, and overall learning experience. Additional data were obtained through instructor observation, which involved systematic teaching notes documenting student engagement, classroom activity, and the dynamics of group interaction. Finally, a qualitative analysis of individual student work was conducted: samples of written assignments were examined with respect to lexical diversity and grammatical accuracy.

The survey was held in two stages: at the beginning of the experiment, in order to document participants' initial attitudes and expectations, and at the end of the term, to assess any changes over time. The instrument consisted of standardized questions, partially adapted from established methodological frameworks, and employed a Likert-scale format for response measurement. Data obtained through instructor observation made it possible to capture relevant contextual factors, such as changes in the level of classroom discussion and student

engagement, and the ways in which learners utilized AI-based tools, including ChatGPT, as well as online dictionaries during the learning process.

4 RESULTS

Quantitative analysis of academic performance. A comparison of mean grades received during the final tests in both groups revealed a statistically significant improvement in the experimental group. Specifically, the average grade on the vocabulary knowledge test

in the EG increased by 18% compared to the baseline level, whereas the CG demonstrated an increase of only 7%. The difference between the two groups was statistically significant ($p < 0.05$). In addition, the EG showed better progress in reading comprehension and writing skills. The mean grade on the written examination increased substantially compared to the previous term, with gains notably higher than those observed in the CG. Overall, 85% of students in the EG advanced to higher proficiency levels according to the CEFR scale, compared to 60% in the CG (see Fig. 1).

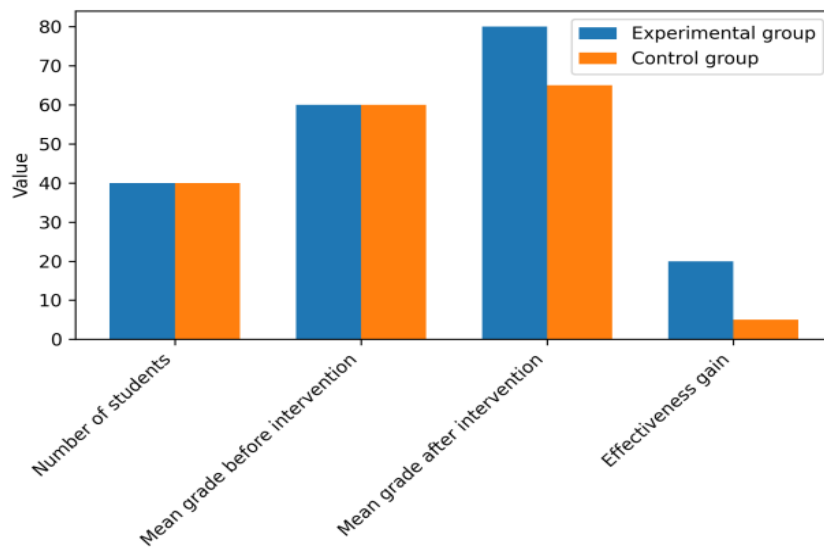


Figure 1: Learning outcomes of students in the EG and CG following the implementation of digital resources.

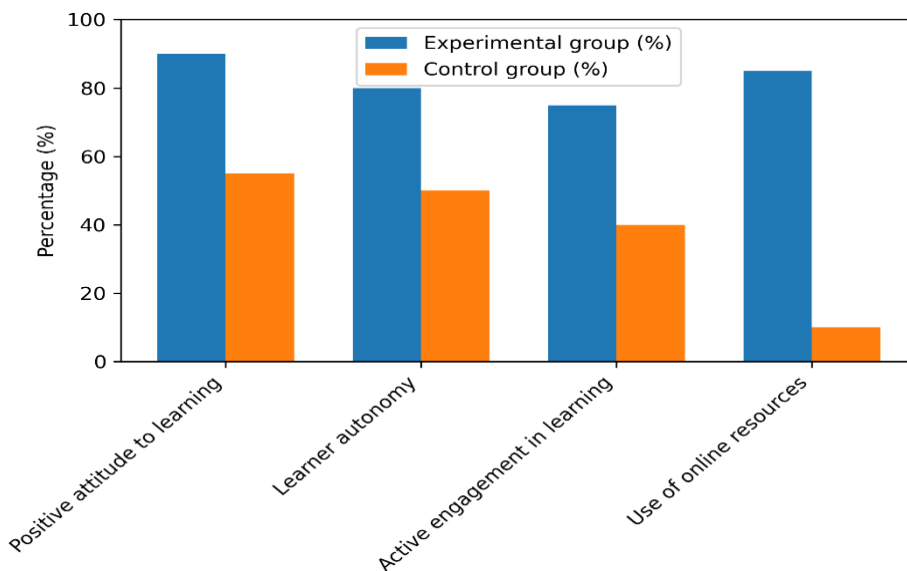


Figure 2: Increase in student motivation and engagement among learners using digital resources

Qualitative analysis and assessment of motivation. According to the questionnaire data, students in the experimental group reported an increase in motivation and engagement. Specifically, 90% of EG respondents indicated that the classes were more engaging due to the use of interactive activities, whereas only 55% of students in the control group reported a similar perception. The majority of EG participants positively evaluated the use of Quizlet as a gamified component, noting that it “makes learning easier and more enjoyable.” Furthermore, 80% of students emphasized that the ability to complete tasks at a convenient time through online platforms enhanced their learner autonomy, which they described as increased “independence from time and place of preparation.”

Many participants also highlighted the convenience of Google Classroom, noting that the platform enables prompt feedback from the teacher and allows students to monitor their progress. In open-ended responses, students reported that ChatGPT assisted them in formulating their ideas more clearly in English by providing useful example sentences. The survey results indicated that 85% of students in the EG favor the use of ChatGPT in the learning process, perceiving it as an “interactive assistant”.

Comparison of group interaction. Instructor observations indicated that students in the EG engaged more actively in pair and small-group work during class sessions. They willingly discussed responses to Quizlet-based quizzes and collaboratively analyzed the results. This level of collaborative engagement is consistent with findings of the research, which suggests that the use of Google Classroom fosters teamwork and contributes to more positive student attitudes toward the subject. In contrast, learning in the control group was more formalized, and classroom discussions occurred less frequently (see Fig. 2).

Thus, the quantitative analysis revealed significantly stronger academic outcomes in the EG, while the qualitative findings confirmed higher levels of student motivation and self-organisation. In particular, the majority of participants noted that “due to the use of digital tools, communication became more interactive,” and that the process of foreign language learning was perceived as clearer and more accessible.

5 CONCLUSIONS

The pedagogical investigation confirmed the high effectiveness of integrating digital language resources into foreign language instruction for students in non-linguistic degree programmes. The application of Quizlet, Google Classroom, ChatGPT, and interactive online dictionaries resulted in a substantial increase in lexical proficiency, improved writing skills and reading comprehension, and greater activation of self-directed learning processes. Students’ positive perception of ChatGPT as a virtual academic support tool indicates the potential of AI-based assistants to stimulate sustained interest in learning English.

The experimental findings demonstrate not only improved academic performance - with the experimental group achieving an 18% increase in vocabulary test scores compared to 4% in the control group - but also a significant enhancement of student motivation and engagement, with 90% of EG participants reporting classes as more engaging and 85% noting better consolidation of learning material. ChatGPT and interactive dictionaries further fostered critical thinking, argumentation, and self-evaluation, promoting deeper language processing.

The integration of digital language technologies into foreign language teaching for students in Economics, Law, Public Administration, and Accounting can therefore be regarded as pedagogically sound and forward-looking, which is supported both by the results of the present study and by existing international research. Future research should examine the long-term retention of vocabulary gains and the effectiveness of AI-assisted instruction across varied disciplinary contexts.

6 PRACTICAL RECOMMENDATIONS

The following recommendations are intended for educators and programme coordinators seeking to integrate digital language resources (Quizlet, Google Classroom, ChatGPT, and interactive dictionaries) into the teaching process at non-linguistic higher education institutions.

- 1) Integration of digital platforms into course structure. Educators are advised to incorporate Quizlet, Google Classroom, ChatGPT, and interactive dictionaries across all stages of instruction – from the introduction of new material to summative assessment tasks.

- 2) Combining individual and group learning activities. The use of interactive exercises for independent vocabulary consolidation (Quizlet) should be complemented by collaborative tasks, including group discussions, case studies, and debates, in order to foster the development of communicative competence.
- 3) Use of AI-based assistants for written and oral tasks. ChatGPT may be employed as a tool for checking grammar, generating examples, and preparing for presentations and role-play activities. It is essential to structure the work in a way that encourages students not only to receive ready-made outputs but also to analyze them and make their own conclusions.
- 4) Systematic revision and knowledge monitoring. Interactive dictionaries and platforms offering automated assessment tools support regular revision and learner self-control. Educators may create weekly short tests and quizzes to track student progress.
- 5) Development of digital literacy among educators and students. To maximize the effectiveness, it is advisable to provide training for educators on the integration of digital resources into the teaching process, as well as to equip students with the skills required for the independent use of digital platforms to consolidate knowledge.
- 6) Personalization of learning. Digital platforms make it possible to adapt tasks to individual students' proficiency levels by providing additional practice for learners who require further support and more challenging activities for advanced students.
- 7) Evaluation of effectiveness. It is recommended to conduct monthly analyses of students' academic performance and feedback in order to refine approaches to the use of digital resources and to optimize the learning process.

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