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**Research Article**

# Using Artificial Intelligence Tools to Develop Students' Foreign Language Communicative Competence in Wartime

**Viktoriia Lemeshchenko-Lagoda[1*], Iryna Kryvonos[1]**
[1]Dmytro Motornyi Tavria State Agrotechnological University (Zaporizhzhia, Ukraine)
ORCID ID: https://orcid.org/0000-0002-1080-5510 (Viktoriia),
ORCID ID: https://orcid.org/0000-0001-7079-5150 (Iryna)

## Abstract

This article examines the use of AI-based tools to develop students' foreign-language communicative competence in wartime higher education in Ukraine. It reports findings from a 12-week quasi-experimental study conducted at Dmytro Motornyi Tavria State Agrotechnological University under conditions of relocation and fully online learning. Eight third-year student groups (N = 104) were divided into a control group receiving standard distance instruction and an experimental group using AI-supported tools for speaking, listening, reading, and writing. Pre- and post-testing showed improvement in both groups, but gains were stronger in the experimental group, especially in speaking (+15 percentage points) and listening (+17 percentage points). Reading and writing also improved, although less markedly. Questionnaire data further indicated increased motivation, engagement, and satisfaction with personalised feedback among students using AI. The findings suggest that AI can serve as a compensatory pedagogical resource in emergency online language education by expanding opportunities for oral practice and flexible self-study. At the same time, its use requires teacher guidance, attention to academic integrity, and awareness of unequal digital access.

## Keywords

artificial intelligence (AI); communicative competence; distance learning; higher education; wartime education; English for Specific Purposes (ESP); Ukraine

## Abstrakt

Artykuł analizuje wykorzystanie narzędzi opartych na sztucznej inteligencji do rozwijania kompetencji komunikacyjnej studentów w zakresie języka obcego w szkolnictwie wyższym funkcjonującym w warunkach wojny w Ukrainie. Przedstawiono wyniki 12-tygodniowego badania quasi-eksperymentalnego przeprowadzonego na Dmytro Motornyi Tavria State Agrotechnological University w warunkach relokacji i całkowicie zdalnego nauczania. Osiem grup studentów trzeciego roku (N = 104) podzielono na grupę kontrolną, realizującą standardowe kształcenie na odległość, oraz grupę eksperymentalną, korzystającą dodatkowo z narzędzi AI wspierających mówienie, słuchanie, czytanie i pisanie. Testy przed i po interwencji wykazały poprawę wyników w obu grupach, jednak większy przyrost odnotowano w grupie eksperymentalnej, zwłaszcza w zakresie mówienia (+15 punktów procentowych) i słuchania (+17 punktów procentowych). W zakresie czytania i pisania postęp również wystąpił, lecz był mniej wyraźny. Dane ankietowe wskazały ponadto na wzrost motywacji, zaangażowania oraz satysfakcji ze spersonalizowanej informacji zwrotnej. Wyniki sugerują, że AI może pełnić funkcję kompensacyjną w awaryjnym nauczaniu języków online, poszerzając możliwości ćwiczenia sprawności ustnych i elastycznej pracy własnej. Jednocześnie jej wykorzystanie wymaga kontroli nauczyciela, dbałości o uczciwość akademicką oraz uwzględnienia nierównego dostępu cyfrowego.

## Słowa kluczowe

sztuczna inteligencja (AI); kompetencja komunikacyjna; kształcenie na odległość; szkolnictwo wyższe; edukacja w czasie wojny; język angielski do celów specjalistycznych (ESP); Ukraina

***Corresponding author**: Viktoriia Lemeshchenko-Lagoda **Email address:** viktoriia.lemeshchenko-lagoda@tsatu.edu.ua
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## 1. Introduction

Higher education in Ukraine has been operating under unprecedented constraints caused by Russia's full-scale invasion, the temporary occupation of territories, and the forced relocation of entire universities. In many institutions, including Dmytro Motornyi Tavria State Agrotechnological University (Zaporizhzhia, Ukraine), regular on-campus teaching became impossible and was replaced by fully online or mixed emergency formats. Under these conditions, foreign language instruction for non-linguistic students became especially vulnerable: teachers and students were dispersed across regions (or abroad), Internet access was unstable, and live communicative practice in English was sharply reduced.

At the same time, technical and agricultural universities must continue to train future specialists who can access international professional information, participate in cross-border projects, and communicate effectively in English in domain-specific situations. This requires not only coverage of the curriculum but also the development of foreign-language communicative competence across all four skills (listening, speaking, reading, writing) in a learning environment where the usual teacher–student interaction is disrupted.

In this wartime reality, AI-powered online tools accessible under relocation conditions emerged as a potentially compensatory resource. AI-powered chatbots, pronunciation trainers, task generators, and automated writing assistants can provide individualised practice, immediate feedback, and flexible access to speaking and listening activities at times when synchronous meetings are interrupted by air-raid alerts or technical problems. However, most existing studies on AI-assisted foreign language learning describe stable, campus-based settings; much less is known about how AI can be purposefully integrated into emergency, fully online English courses in Ukrainian HEIs affected by the war.

Therefore, this article aims to analyse the possibilities and effectiveness of integrating AI-based tools into distance English instruction for non-linguistic students in wartime conditions. It (a) identifies the specific challenges of teaching a foreign language in relocated technical universities, (b) tests an AI-supported model of skills development in a 12-week pedagogical experiment, and (c) discusses both the pedagogical benefits (personalisation, feedback, motivation) and the risks (overreliance on AI, academic integrity, unequal access) of such integration.

Beyond its immediate practical relevance, the study addresses a specific gap at the intersection of AI-assisted language learning and emergency pedagogy. While previous research has demonstrated the pedagogical value of automated feedback, dialogic practice, and adaptive support in relatively stable digital environments, much less is known about contexts in which technological mediation becomes not merely an enhancement but a condition of continuity. In wartime Ukrainian higher education, AI-supported tools may therefore perform a dual function: pedagogical, by extending opportunities for communicative practice, and infrastructural, by preserving access to language learning when synchronous teaching is repeatedly disrupted. From this perspective, AI should be understood not as a substitute for the teacher, but as a resilience-oriented support mechanism within emergency online instruction (Chapelle, 2016; Council of Europe, 2020; Godwin-Jones, 2023; Huang et al., 2024).

## 2. Theoretical Background

The issue of introducing digital technologies into the educational process is actively covered in contemporary pedagogical and linguistic research. A significant number of authors emphasise that the digitisation of education opens new opportunities for improving the effectiveness of foreign language teaching. Sherstyuk, Bondar, and Pylypenko (2024) note that teachers actively use language applications, text generators, and chatbots to create materials and practical exercises, among which tools for automatic text correction, student assessment, and translation are particularly popular (p. 581).

According to Mahini et al. (2012), the use of artificial intelligence can enhance the development of learning skills and increase student motivation. However, for example, personal contact between a student and a teacher may be reduced when relying heavily on modern technologies, thereby complicating the achievement of key social goals of education, such as the development of civic responsibility and moral values among participants in the educational process (p. 1614). Andrieieva (2024) rightly notes that by adapting tasks and pace to each student's needs, artificial intelligence systems help personalise the learning process. She emphasizes that, thanks to interactive platforms that use artificial intelligence, it is possible to improve conversational skills, the correct use of grammatical structures, and pronunciation in real time. A key feature of artificial intelligence is instant feedback, which enables users to quickly correct errors and enhance learning outcomes (pp. 142-145).

According to Zubenko (2023), the usage of artificial intelligence in foreign language classes in higher education institutions allows for more vivid and engaging lessons, increases the intensity of the learning process, promotes instant feedback, motivates cognitive activity, activates mental abilities, engages passive students, develops abstract and logical thinking, and encourages individualisation and intensification of learning through independent work with digital resources (pp. 82-84).

However, scientists also identify potential problems associated with the use of AI technologies in foreign language classes. Martyniuk (2024) emphasizes that integrating AI tools into the educational process to increase learning effectiveness is a challenging task (p. 67). According to Hasynets et al. (2024), the problem also lies in limiting the development of critical thinking, creativity, and teamwork skills due to simplified access to information. Explaining this, easy access to ready-made answers can suppress students' desire to develop their own logical solutions and reduce their engagement in learning, leading to a significant decline in soft skills. Moreover, the use of AI requires a stable Internet connection and access to electronic devices. Scientists note that this is a problem for students with limited technical capabilities, especially those currently in the workforce who lack a stable Internet connection or who continue to reside in occupied regions or areas near the territory of hostilities (pp. 270-273).

This can lead to dependence on AI programs, which may result in a loss of skills in working with paper materials, reference books, and dictionaries. Scientists emphasize that quick answers, which are often superficial and fail to account for grammatical or cultural aspects, can lead to students receiving incorrect feedback. And because remote learning relies on artificial intelligence applications, it is

difficult for teachers to monitor the learning process.

In this article, we adopt an operational view of foreign-language communicative competence that foregrounds performance across four skills (listening, speaking, reading, writing), in line with earlier competence models (Canale & Swain, 1980) and the action-oriented perspective of the CEFR Companion Volume (Council of Europe, 2020). This framing is suitable for short, skills-oriented interventions in emergency online instruction.

## 3. Method

### 3.1. Research Design

The study employed a quasi-experimental design, incorporating descriptive quantitative analysis, supplemented by classroom observations and a motivation/perception questionnaire. Two naturally existing (intact) cohorts of third-year students were compared: a control group that studied English through the university's regular distance-learning tools and an experimental group that, in addition, used a set of AI-based applications for speaking, listening, reading, and writing. Because the groups could not be randomly assigned (due to wartime relocation and fixed timetables), the design is quasi-experimental and primarily exploratory.

### 3.2. Participants

The sample consisted of 104 students (8 academic groups, 3rd year) from Dmytro Motornyi Tavria State Agrotechnological University (Zaporizhzhia, Ukraine), who were relocated to Zaporizhzhia National University. The students represented non-linguistic majors (Geodesy and Land Management, Ecology, Food Technology, Hotel and Restaurant Business). Four groups (n = 52) formed the control condition; four groups (n = 52) formed the experimental condition. All students followed the same institutional English syllabus (Year 3).

### 3.3. Instruments

Four-skill achievement test. A teacher-made test, aligned with the working curriculum and mapped to A2–B1 CEFR descriptors (Council of Europe, 2020), was used at both the pre-test and post-test to assess listening, speaking, reading, and writing. The exact form was administered twice to ensure comparability.

AI toolset (intervention). The experimental groups were given a curated list of AI-supported tools grouped into four functional clusters:

– oral practice/pronunciation (e.g., ELSA Speak, Gliglish, Lingolette, Languate ES);

– writing support and self-editing (e.g., Grammarly, ProWritingAid, Slick Write);

– task/content generators for teachers and students (e.g., ChatGPT, Magic School AI, Teachertools, Twee);

– assessment/engagement tools (e.g., Wordwall, Quizlet, Wooclap, Quizizz).

Motivation and perception questionnaire. A 9-item instrument (5-point Likert scale: 1 = completely disagree … 5 = completely agree) measured motivation, perceived usefulness of AI, opportunities for speaking, and satisfaction with personalised feedback. Two FL lecturers checked content validity; internal consistency was acceptable (Cronbach's $\alpha$ = .84).

Classroom observation protocol. Short observation notes were kept to document technical disruptions (air-raid alerts, unstable Internet), patterns of AI use, and student engagement.

### 3.4. Procedure

The intervention lasted 12 weeks (February–April 2025), i.e., one academic semester under wartime conditions, entirely online.

**Week 1 (pre-test)**: both control and experimental groups took the same four-skill diagnostic test. Baseline scores in both groups were similar (approximately 67–69%), which was expected following the winter break.

**Weeks 2–11 (instruction)**:

1. Control groups followed the standard distance-learning model used at the university (LMS + video meetings + teacher-made tasks).

2. Experimental groups followed the same syllabus but were additionally required to complete AI-based speaking and listening practice, generate extra reading tasks, and check their writing with AI tools. Teachers demonstrated the tools in class and then assigned them for independent work to compensate for the loss of synchronous interaction.

**Week 12 (post-test + survey)**: both groups retook the same four-skill test. The experimental group also completed the post-test version of the motivation/perception questionnaire (a baseline version had been administered in Week 1).

Because the university operated in a relocation mode, some sessions were asynchronous; the AI tools were designed to maintain continuity when live meetings were interrupted by security alerts or connectivity issues.

### 3.5. Data Analysis

Quantitative data (pre- and post-test scores across four skills) were analysed using descriptive statistics, including means, percentage-point gains, and comparisons between control and experimental groups. Because the groups were intact and not randomly assigned, no inferential statistics were applied; the findings are therefore indicative rather than conclusive. Questionnaire data were summarised by item-level means and gain scores (pre–post) to identify the most substantial perceived AI effects (speaking practice, personalised feedback, engagement).

Given the exploratory nature of the design, the analysis focuses on the direction and magnitude of change rather than on causal proof. The observed differences between the control and experimental groups are therefore interpreted as pedagogically meaningful trends rather than as statistically confirmed effects. This analytical restraint is especially important in wartime conditions, where intact groups, interrupted schedules, and unequal digital access constrain the degree of experimental control that can realistically be achieved.

### 3.6. Ethical Considerations

Participation in the end-of-course questionnaire was voluntary and anonymous; no sensitive data were collected. The study was conducted in accordance with the university's Regulations on Distance Learning and within the temporary-relocation framework established by the Ministry of Education and Science of Ukraine (Order No. 387, April 26, 2022). No external ethics approval was required because the research did not involve minors or medical procedures.

## 4. Results

### 4.1. Organisation of Distance Learning by Integrating AI into the Foreign Language Learning Process

Thus, despite all the difficulties, the university reformulated its mission under wartime conditions: not merely to preserve the formal continuity of teaching, but to maintain a modern educational and scientific environment capable of supporting professional training, access to up-to-date disciplinary knowledge, and the gradual development of students'

communicative and digital competences. In practice, this required a flexible model of distance learning that could operate amid relocation, unreliable internet access, asynchronous participation, and repeated interruptions caused by air-raid alerts or security risks.

According to the updated norms, distance learning became the principal form of education for students in temporarily occupied territories, abroad, or in other regions where in-person teaching was impossible. Within this framework, the organisation of the educational process relied on a set of interrelated measures designed to ensure academic continuity and accessibility (Ministerstvo osvity i nauky Ukrainy, 2022; Tavriiskyi derzhavnyi ahrotekhnolohichnyi universytet imeni Dmytra Motornoho, 2023):

– the use of electronic educational resources and platforms for lectures, seminars, and practical classes;

– ensuring access to educational materials through the university's online resources;

– conducting students' knowledge assessment through electronic tests and tasks;

– organisation of feedback between teachers and students through e-mail, messengers, and videoconference.

At the same time, the wartime mode of operation showed that the mere availability of digital platforms was insufficient for effective foreign-language learning. Although the institutional distance-learning system ensured access to materials and communication channels, it could not always compensate for the reduced amount of live speaking practice, the fragmentation of synchronous classes, or the limited opportunities for individualised feedback in large online groups. These constraints were especially visible in the teaching of English to non-linguistic students, for whom regular communicative practice is essential but was frequently disrupted by external circumstances.

In response to these challenges, the Department of Foreign Languages at Dmytro Motornyi Tavria State Agrotechnological University (Zaporizhzhia, Ukraine) introduced artificial intelligence tools to enhance the quality of education. At departmental meetings, the integration of AI technologies into the educational process was discussed not only as a technological innovation, but also as a practical response to several interrelated needs:

– automation of the assessment of students' written work and oral presentations;

– individualisation of the learning process by adapting materials to the needs of each student;

– improvement of feedback and monitoring of student progress;

– expansion of opportunities for additional speaking and listening practice beyond scheduled class time.

Consequently, it was decided to provide students with a structured list of modern AI tools for use during homework and independent study to facilitate the systematic development of all key language skills: writing, reading, listening, and speaking. These tools were not introduced as a substitute for the teacher or for the institutional distance-learning platform. Rather, they were embedded into the existing instructional framework as a supplementary layer intended to strengthen flexibility, support self-correction, extend communicative practice, and maintain continuity of language learning when stable synchronous interaction was not always possible.

### 4.2. Methods and Results of Experimental Teaching in Academic Groups

When selecting the tools, the authors drew primarily on Huang et al. (2024), who show that generative AI acceptance, perceived teachers' enthusiasm, and self-efficacy are associated with EFL learners' well-being in the digital era. In the present study, this was operationalised through AI-supported tools intended to reduce anxiety, increase confidence, and expand opportunities for low-stakes speaking practice.

Thus, each student had the opportunity to choose the tools that best suited their individual learning style and current level of knowledge, ensuring a high level of individualisation and personalisation in the learning process.

To improve their writing skills, students were encouraged to use AI tools such as Grammarly, ProWritingAid, and Slick Write. With their help, students could check their written work for grammatical, spelling, or stylistic errors, as well as work on the logical and structural cohesion between parts of the text. In addition, during classes, teachers gave students on-the-spot assignments to provide extra exercises on topics most students found difficult (ChatGPT, Magic School AI, Teachertools, AI Sheets, and Twee). Students could also use these resources independently to generate tasks for themselves outside of class.

To improve their speaking skills, teachers suggested that students use AI tools such as ELSA Speak, Gliglish, Lingolette, Langua, ChatGPT, and Eigo AI, which allow them to conduct dialogues directly within the applications, practice pronunciation and intonation, and, upon request, receive feedback on mistakes and mispronunciations. Students could use these tools both to prepare individual creative assignments, presentations, and reports, and to improve their own speech in their free time. Thus, the use of AI tools allowed students to practise speaking on various topics at any time convenient for them.

In addition, students were advised to use tools such as Leonardo AI, MemeCam, and Visme to provide visual accompaniment for their reports and presentations, which allowed them to generate visual content based on their own stories or photos promptly.

To develop their listening skills, students were encouraged to use a combination of AI-supported and digital audio tools, including NaturalReader and Luvvoice for text-to-speech support, alongside listening resources such as Listenwise, TED-Ed, and ELLLO. These tools enabled students to listen to ready-made materials and, where appropriate, generate audio from their own texts for repeated listening practice.

To improve their reading skills, students were encouraged to use AI tools that generate tasks based on any text to test their comprehension. Tools such as ChatGPT, Magic School AI, Teachertools, and Twee could be used not only outside of class but also during class. Thus, teachers were able not only to familiarise students with different task formats, but also to teach students how to use these tools for personal use outside of class.

For the quick assessment and monitoring of lexical and grammatical content acquisition, teachers used digital assessment and engagement tools, including Wordwall, Quizlet, Kwizie, Wooclap, and Quizizz. These tools enabled quick surveys, knowledge assessments, and even group

competitions, which helped lighten the atmosphere in the classroom and assess the level of acquisition of new material, covering both psychological and educational factors.

As a result, students in the experimental group had access to all the proposed tools. They could use both to prepare for classes and meet their individual needs, ensuring a personalised learning process and enabling students to follow their educational trajectories effectively.

This experimental study evaluated the effectiveness and feasibility of using artificial intelligence (AI) technologies in the English-language learning process for third-year students in non-linguistic majors. The control groups studied using traditional methods without AI tools, whereas the experimental groups combined the same syllabus with systematic use of AI-based applications during and between classes.

**Table 1. The ECTS Grading Scale Used for Interpreting Students' Performance on the 100-Point Assessment System**

| ECTS Grade | Definition | Percentage / 100-point scale |
|---|---|---|
| **A** | Excellent – outstanding performance with only minor errors | 90–100 % |
| **B** | Very good – above the average standard, but with some errors | 82–89 % |
| **C** | Good – generally sound work with several notable errors | 75–81 % |
| **D** | Satisfactory – fair, but with significant shortcomings | 67–74 % |
| **E** | Sufficient – performance meets the minimum criteria | 60–66 % |
| **FX** | Fail – some more work required before the credit can be awarded | 35–59 % |
| **F** | Fail – considerable further work is required | 1–34 % |

Thus, at the beginning of the experiment, the average level of students' knowledge in the control and experimental groups ranged from 67 to 69% (see Tables 2 and 7). Several factors can explain the obtained results. Firstly, before the experiment began, the students had been on a month-long term holiday, which naturally led to a decrease in their active command of the foreign language, and the recorded indicators mainly reflected their residual knowledge.

Secondly, the diagnostic testing has been designed to cover not only the material already learned but also issues not yet studied in the current course. This made it possible to obtain a more objective idea of the initial level of English language proficiency, but at the same time led to relatively low start-up results.

Following the experimental period, a difference in the dynamics of academic achievement was observed between the control and experimental groups. In the control groups, the average level of knowledge has increased slightly, by approximately 6-8 percentage points, indicating a moderate effect of traditional learning (see Tables 2, 3, 4, 5, 6).

**Table 2. Average Scores by Language Skills (100-Point Scale) – Control Group**

| Skill | Control Pre | Control Post | Δ (p.p.) |
|---|---|---|---|
| Speaking | 68.0 | 75.0 | +7.0 |
| Writing | 69.0 | 76.0 | +7.0 |
| Listening | 67.0 | 73.0 | +6.0 |
| Reading | 68.0 | 76.0 | +8.0 |

Table 3 shows the distribution of control group students across ECTS levels in speaking before and after the experiment, illustrating a shift towards higher achievement bands.

**Table 3. The Results to Evaluate the Level of Speaking Skills Before and After the Experiment**

| ECTS Level | Number of Students Pre | Number of Students Post |
|---|---|---|
| **A (90–100)** | 3 | 4 |
| **B (82–89)** | 10 | 11 |
| **C (75–81)** | 12 | 13 |
| **D (67–74)** | 18 | 15 |
| **E (60–66)** | 9 | 9 |

Table 4 shows the distribution of writing performance in the control group before and after the experiment, illustrating a shift towards higher ECTS levels.

**Table 4. The Results to Evaluate the Level of Writing Skills Before and After the Experiment**

| ECTS Level | Number of Students Pre | Number of Students Post |
|---|---|---|
| A (90–100) | 3 | 4 |
| B (82–89) | 11 | 12 |
| C (75–81) | 14 | 15 |
| D (67–74) | 16 | 15 |
| E (60–66) | 8 | 6 |

Table 5 presents changes in listening performance in the control group across ECTS levels.

**Table 5. The Results to Evaluate the Level of Listening Skills Before and After the Experiment**

| ECTS Level | Number of Students Pre | Number of Students Post |
|---|---|---|
| A (90–100) | 2 | 3 |
| B (82–89) | 8 | 9 |
| C (75–81) | 16 | 17 |
| D (67–74) | 18 | 16 |
| E (60–66) | 8 | 7 |

Table 6 presents changes in reading performance in the control group across ECTS levels.

**Table 6. The Results to Evaluate the Level of Reading Skills Before and After the Experiment**

| ECTS Level | Number of Students Pre | Number of Students Post |
|---|---|---|
| A (90–100) | 3 | 4 |
| B (82–89) | 12 | 13 |
| C (75–81) | 14 | 15 |
| D (67–74) | 16 | 14 |
| E (60–66) | 7 | 6 |

The results of the experimental group, whose students used artificial intelligence technologies in the learning process, are characterized by more pronounced indicators of skill growth level, with an increase in average points of 11 to 17 percentage points (see Tables 7, 8, 9, 10, 11).

**Table 7. Average Scores by Language Skills (100-Point Scale) – Experimental Group**

| Skill | Experimental Pre | Experimental Post | Δ (p.p.) |
|---|---|---|---|
| Speaking | 67.0 | 82.0 | +15.0 |
| Writing | 68.0 | 79.0 | +11.0 |
| Listening | 68.0 | 85.0 | +17.0 |
| Reading | 69.0 | 80.0 | +11.0 |

Table 8 presents the distribution of speaking performance in the experimental group before and

after the experiment, showing a shift towards higher ECTS levels, consistent with an overall gain of +15 percentage points.

**Table 8. The Results to Evaluate the Level of Speaking Skills Before and After the Experiment**

| ECTS Level | Number of Students Pre | Number of Students Post |
|---|---|---|
| A (90–100) | 2 | 5 |
| B (82–89) | 10 | 12 |
| C (75–81) | 15 | 18 |
| D (67–74) | 20 | 14 |
| E (60–66) | 5 | 3 |

Table 9 presents changes in writing performance in the experimental group across ECTS levels, reflecting an overall gain of 11 percentage points and a shift of several students into higher ECTS bands.

**Table 9. The Results to Evaluate the Level of Writing Skills Before and After the Experiment**

| ECTS Level | Number of Students Pre | Number of Students Post |
|---|---|---|
| A (90–100) | 3 | 6 |
| B (82–89) | 12 | 14 |
| C (75–81) | 15 | 18 |
| D (67–74) | 18 | 11 |
| E (60–66) | 4 | 3 |

Table 10 presents changes in listening performance in the experimental group across ECTS levels, consistent with a 17-percentage point increase in average scores.

**Table 10. The Results to Evaluate the Level of Listening Skills Before and After the Experiment**

| ECTS Level | Number of Students Pre | Number of Students Post |
|---|---|---|
| A (90–100) | 3 | 7 |
| B (82–89) | 12 | 15 |
| C (75–81) | 18 | 16 |
| D (67–74) | 15 | 10 |
| E (60–66) | 4 | 4 |

Table 11 presents changes in reading performance in the experimental group across ECTS levels, reflecting an 11-percentage point increase.

**Table 11. The Results to Evaluate the Level of Reading Skills Before and After the Experiment**

| ECTS Level | Number of Students Pre | Number of Students Post |
|---|---|---|
| A (90–100) | 4 | 6 |
| B (82–89) | 13 | 15 |
| C (75–81) | 15 | 17 |
| D (67–74) | 15 | 10 |
| E (60–66) | 5 | 4 |

For analytical clarity, the AI tools used in the experimental condition can be grouped into four functional clusters: (a) oral practice and pronunciation trainers (ELSA Speak, Gliglish, Lingolette, Languate ES); (b) writing-support and self-editing tools (Grammarly, ProWritingAid, Slick Write); (c) task- and content-generation tools used by both teachers and students (ChatGPT, Magic School AI, Teachertools, AI Sheets, Twee); and (d) assessment and engagement tools (Wordwall, Quizlet, Kwizie, Wooclap, Quizizz). This grouping helps to interpret the outcome pattern: the strongest learning gains were observed in speaking and listening, that is, in the two skills most directly targeted by the oral-practice cluster.

The largest improvements in the experimental groups were observed in speaking (+15 pp) and listening (+17 pp), which may plausibly be related to more intensive practice through interactive dialogues and to the use of AI applications incorporating automated speech recognition. The dynamics of

material assimilation highlight the effectiveness of AI tools in enhancing student learning and motivation.

Additionally, after the experiment, the students in the experimental groups completed a questionnaire on their motivation to learn English and the subjective impact of AI use.

The questionnaire consisted of 9 statements, evaluated on a 5-point Likert scale from 1 ("completely disagree") to 5 ("completely agree") (see Table 12).

The survey results (see Table 12, Appendix A) indicate that the use of AI technologies in the English learning process had a positive impact on student motivation and engagement in the experimental group. Baseline scores at the beginning of the course ranged from 2.6 to 3.2 on the 5-point scale. At the same time, after the 12-week intervention, they increased to approximately 4.0 to 4.5 across key indicators, reflecting higher motivation, engagement, and perceived usefulness of AI-supported learning.

The most significant increase was observed in "personalised feedback" (+1.7), indicating that students particularly valued the opportunity to receive individualized recommendations and correct AI errors.

Other key indicators also show significant improvements:

– the motivation to learn English increased by +1.1, reflecting a general increase in interest in learning;

– the learning process became more engaging (+1.5) and there were more opportunities for conversation (+1.5), indicating a high level of engagement and interactivity;

– the confidence in English proficiency increased by +1.3, and the time spent learning with AI increased by +1.1, indicating active student participation;

– the recommendations to other students (+1.3) demonstrate a positive attitude towards the use of AI in the educational process.

In general, the analysis indicates that the use of AI technologies has significantly increased students' motivation, involvement, and learning effectiveness. The experimental group evaluated the influence of AI as very positive, with the most significant effect observed in the personalisation of the educational process and the practice of speaking skills.

## 5. Discussion

This study aimed to investigate whether integrating a set of AI-based tools into distance English classes for non-linguistic university students can compensate for the loss of face-to-face interaction caused by wartime disruptions in Ukraine. The results show that both the control and experimental groups improved over the 12-week period. Still, the experimental group achieved clearly higher gains, particularly in speaking (+15 percentage points) and listening (+17 percentage points). This pattern is consistent with current observations in technology-enhanced language learning, which suggest that AI tools are particularly effective when they provide immediate, dialogic, and repetitive oral practice outside the classroom and without the teacher's constant presence.

The wartime and relocation contexts are essential for interpreting these findings. Under conditions of air-raid alerts, unstable internet connections, and students' physical displacement, teachers cannot rely on regular, fully synchronous lessons. In such settings, AI tools served as a compensatory layer: students could return to pronunciation trainers, chatbots, or AI-voiced texts at times that were safe

and technically feasible for them. In other words, AI did not replace the teacher but stabilised access to oral language practice in an otherwise unstable learning environment. This confirms that AI can support educational continuity in emergency or post-relocation HEIs.

At the same time, the improvement in reading and writing was more modest (typically +11 p.p. in the experimental group) and only slightly above that of the control group. A likely explanation is that, for ethical reasons, students were allowed to use AI primarily to check and enhance their written work, rather than to generate it. This responsible approach prevented overreliance on AI and protected academic integrity, but it also limited AI's potential impact on written production. The finding supports earlier warnings that AI in language education should be framed not as a source of ready-made texts, but as a scaffold for self-editing, vocabulary expansion, and genre awareness.

The motivational results reinforce this interpretation. Students in the experimental group reported higher engagement, more opportunities to speak, and—crucially—better personalised feedback. Personalisation is especially valuable in wartime distance learning, where teachers have less time for one-to-one support. AI systems were able to provide the "first level" of feedback (pronunciation, correctness, basic structure), leaving the teacher to focus on more complex, communicative, or domain-specific issues.

From a broader pedagogical perspective, the findings support a model of guided augmentation rather than technological substitution. Within such a model, AI tools provide the first layer of practice and feedback—especially for pronunciation, fluency, repetition, and initial self-correction—while teachers remain responsible for task design, ethical framing, communicative authenticity, and domain-specific evaluation. This distinction is particularly important in ESP-oriented instruction, where linguistic performance must be aligned not only with formal correctness but also with professional appropriateness and contextual relevance (Canale & Swain, 1980; Council of Europe, 2020; Chapelle, 2016).

Nevertheless, several risks remain. First, unequal access to devices and a stable internet connection means that AI can exacerbate existing digital divides, particularly for students residing in frontline or underserved areas. Second, easy access to AI-generated answers may reduce opportunities for developing critical thinking and collaborative skills if not monitored. Third, this study relied on descriptive comparison of two intact groups; future work should confirm the observed gains with inferential statistics and isolate the effect of tools (e.g., speaking bots vs. task generators).

Overall, the findings suggest that AI is a pedagogically valuable and context-sensitive addition to wartime distance language instruction, as it strengthens oral skills, increases motivation, and provides flexible practice when normal communication channels are disrupted. Its use, however, must remain teacher-guided and ethically framed to avoid substituting AI-generated output for learning.

These results align with broader observations in CALL and AI-in-CALL, which suggest that spoken interaction and pronunciation training tend to benefit most from automated, low-stakes, high-frequency practice (Chapelle, 2016; Godwin-Jones, 2023). The

present study extends this line of research by situating AI-supported oral practice in a high-risk, war-affected higher education context, demonstrating that such tools can function not only as optional enhancements but also as a stability mechanism that sustains communicative practice when synchronous instruction is frequently disrupted.

## 6. Limitations and Further Research

Several limitations should be considered when interpreting the findings of this study. First, the intervention lasted only 12 weeks and involved two intact groups (n = 52 each) rather than randomly assigned cohorts. Because the study was exploratory and relied solely on descriptive statistics, the observed differences between the control and experimental groups should be interpreted as indicative of pedagogical trends rather than statistically confirmed causal effects. Future studies should therefore employ stronger experimental or quasi-experimental designs and, where possible, apply inferential procedures such as t-tests, ANCOVA, or mixed-model analyses to assess the robustness of the observed differences.

Second, the study used a teacher-made four-skill test aligned with the institutional syllabus and mapped to A2–B1 CEFR descriptors. Although this ensured curricular relevance, it also limited external comparability. In addition, the same test form was administered at both the pre-test and post-test stages to preserve comparability, potentially introducing a practice effect. Future research would benefit from parallel test versions, externally validated instruments, or standardised communicative tasks that permit more robust measurement of change in speaking, listening, reading, and writing.

Third, the intervention included several categories of AI-supported tools, ranging from pronunciation trainers and chatbot-based speaking tools to writing aids, task generators, and digital assessment platforms. Because no detailed usage logs were collected, it is not possible to determine with precision how frequently particular tools were used, which functions were most actively engaged, or which specific forms of interaction contributed most to the observed gains. Subsequent studies should therefore isolate the contribution of individual tool types and combine learning-outcome measures with behavioural data documenting the frequency, duration, and patterns of students' interaction with AI-supported resources.

Another limitation concerns the motivational data reported in this study. The perception questionnaire was administered only in the experimental condition, so the increases in engagement, perceived usefulness, and satisfaction with feedback cannot be interpreted as exclusively AI-driven without comparison to a control-group motivational baseline. In addition, the motivational data were self-reported and may partly reflect novelty effects or generally positive attitudes towards digital innovation. Future studies should therefore gather attitudinal data from both groups and, where possible, include delayed follow-up measures to determine whether the observed motivational benefits persist over time.

A further limitation is contextual. The study was conducted in one relocated Ukrainian higher education institution under highly specific wartime conditions. Although this context gives the research its relevance, it also limits the generalisability of the findings to more stable educational settings, to other institutional cultures, and to students with different disciplinary backgrounds or levels of digital access.

For this reason, future research should test comparable AI-supported language instruction models across multiple institutions, ESP domains, and language proficiency levels.

Despite these limitations, the study opens several productive directions for further inquiry. Future work should examine not only whether AI improves overall language performance, but also how different tools support distinct dimensions of communicative competence, including spoken interaction, revision practices, mediation, and professionally situated language use. It would also be valuable to investigate how AI-supported learning can be balanced with academic integrity requirements and how teacher training can prepare instructors to integrate such tools critically, effectively, and ethically in crisis-affected educational settings.

## 7. Conclusions

This study has shown that, in wartime and relocation contexts, integrating AI-supported tools into fully online English instruction was associated with greater learning gains than those observed under traditional distance learning alone. The clearest differences between the control and experimental groups were recorded in speaking and listening, while more moderate but still visible gains were observed in reading and writing. Taken together, these results suggest that AI-supported tools can make a meaningful contribution to the development of foreign-language communicative competence when normal teacher–student interaction is constrained by emergency conditions.

A comparison of pre- and post-test performance showed an increase in reading by 8 points in the control group and 11 points in the experimental group; in writing by 7 and 11 points respectively; in speaking by 7 and 15 points; and in listening by 6 and 17 points. Although these differences should not be interpreted as statistically significant effects, their direction and magnitude indicate a clear pedagogical tendency: AI-supported instruction appears particularly beneficial for oral skills, where repeated practice, immediate feedback, and flexible independent access are especially important.

The study also indicates that the educational value of AI lies not only in measurable learning gains but also in its organisational and motivational functions. In the present context, AI-supported tools extended learning beyond scheduled synchronous sessions, facilitated self-correction, and increased students' engagement with English outside formal class time. Students reported that AI-assisted learning made practice more engaging, provided more opportunities for speaking, and helped them notice and correct their own mistakes more effectively. This suggests that AI may contribute not only to skill development but also to learner persistence and confidence under unstable educational conditions.

At the same time, the findings underline that AI should not be viewed as a replacement for the teacher. Its most productive role is that of a structured pedagogical support mechanism: AI can provide an initial layer of practice and feedback, whereas teachers remain responsible for instructional design, communicative authenticity, contextualisation, evaluation, and academic integrity. This is particularly important in ESP-oriented instruction, where linguistic performance must be aligned not only with formal accuracy but also with disciplinary appropriateness and professional relevance.

In practical terms, the study suggests that higher

education institutions operating in emergency, post-relocation, or hybrid conditions may benefit from incorporating a carefully selected AI toolset into distance foreign-language instruction. Such an approach may be especially useful where regular synchronous contact is limited, and students require flexible opportunities for oral practice, self-study, and feedback. The present findings, therefore, support the view that AI can serve as a resilience-oriented educational resource in crisis-affected higher education, provided that its use remains purposeful, supervised, and pedagogically integrated.

Overall, the article argues that AI-supported language learning in wartime should be understood not as a technological substitution but as a guided augmentation. Under conditions of disruption, displacement, and reduced classroom stability, AI tools may help preserve continuity of communicative practice, strengthen learner engagement, and expand access to meaningful language use. In this sense, their value lies not only in innovation but also in their capacity to sustain educational continuity when ordinary learning conditions can no longer be taken for granted.

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## Author Contributions

**Dr. Viktoriia Lemeshchenko-Lagoda**: Conceptualisation; Methodology; Data curation; Formal Analysis; Investigation; Resources; Software; Validation; Visualisation; Project administration; Writing – original draft; Writing – review & editing.

**Iryna Kryvonos**: Conceptualisation; Methodology; Data curation; Formal Analysis; Investigation; Resources; Software; Validation; Visualisation; Project administration; Writing – original draft; Writing – review & editing.

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## Data Availability Statement

The quantitative pre- and post-test results (anonymised) and the questionnaire template used in this study are available from the corresponding author upon reasonable request. The AI tools and platforms mentioned in the article (e.g., ChatGPT, ELSA Speak, Quizizz, Wordwall, Listenwise) are publicly accessible or available under institutional licences. No proprietary or restricted datasets were used.

## Ethics Statement

The study involved 104 undergraduate students enrolled at Dmytro Motornyi Tavria State Agrotechnological University (Ukraine), who participated in regular course activities and pre- and post-testing. Participation in the end-of-course questionnaire was voluntary and anonymous; no sensitive personal data were collected. The research was conducted in accordance with the university's Regulations on Distance Learning and within the temporary-relocation framework established by the Ministry of Education and Science of Ukraine (Order No. 387, April 26, 2022). Formal approval from an external ethics committee was not required because the study did not involve medical procedures, vulnerable minors, or the collection of identifiable personal data.

## Conflicts of Interest

The authors declare no conflicts of interest.

## AI Use Disclosure

Students used AI-based applications (chatbots, pronunciation trainers, task generators) as part of the instructional intervention. No generative AI systems were employed to draft or edit this manuscript; all sections were written and verified manually by the authors.

## Biography

**Dr. Viktoriia Lemeshchenko-Lagoda** holds a PhD and is an Associate Professor in the Department of Foreign Languages at Dmytro Motornyi Tavria State Agrotechnological University (Zaporizhzhia, Ukraine). Field of scientific interests: methodology of teaching foreign languages in technical universities, integration of AI technologies into education and distance learning, digital tools for enhancing learner autonomy. She is the author of over 50 scientific publications, five textbooks, and monographs.

**Iryna Kryvonos** is a Senior lecturer, Department of Foreign Languages, Dmytro Motornyi Tavria State Agrotechnological University (Zaporizhzhia, Ukraine). Field of scientific interests: methods of teaching English, distance learning in the professional training of non-linguistic university students. She is the author of over 20 scientific publications and five textbooks.

## Nota biograficzna

**dr Wiktoriia Lemeshchenko-Lagoda** – doktor nauk humanistycznych, adiunkt w Katedrze Języków Obcych Państwowego Uniwersytetu Agrotechnologicznego im. Dmytra Motorniego w Tawriji (Zaporoże, Ukraina). Jej zainteresowania naukowe obejmują: metodyka nauczania języków obcych na uczelniach technicznych, integracja technologii sztucznej inteligencji z edukacją i kształceniem na odległość, narzędzia cyfrowe zwiększające autonomię uczących się. Autorka ponad 50 publikacji naukowych, pięciu podręczników i monografii.

**Iryna Kryvonos** – starszy wykładowca w Katedrze Języków Obcych Państwowego Uniwersytetu Agrotechnologicznego im. Dmytra Motorniego w Tawriji (Zaporoże, Ukraina). Jej zainteresowania naukowe obejmują: metody nauczania języka angielskiego, kształcenie na odległość w ramach szkolenia zawodowego studentów kierunków niejęzykowych. Autorką ponad 20 publikacji naukowych, pięciu podręczników.

## Research Field

**Dr. Viktoriia Lemeshchenko-Lagoda**: methodology of teaching foreign languages in technical universities, integration of AI technologies into education and distance learning, use of digital platforms and interactive tools in ESP (English for Specific Purposes) courses, development of learner-centred approaches for engineering students.

**Iryna Kryvonos:** methods of teaching English, distance learning in the professional training of non-linguistic university students.

## Dziedziny badawcze

**dr Wiktoriia Lemeshchenko-Lagoda**: metodyka nauczania języków obcych na uczelniach technicznych, integracja technologii sztucznej inteligencji z edukacją i kształceniem na odległość, wykorzystanie platform cyfrowych i narzędzi interaktywnych w kursach ESP (angielski do celów specjalistycznych), opracowywanie podejść skoncentrowanych na uczniu dla studentów kierunków inżynierskich.

**Iryna Kryvonos:** metody nauczania języka angielskiego, kształcenie na odległość w ramach szkolenia zawodowego studentów kierunków nielingwistycznych.

## Appendix A.

**Table 12. Motivation Survey Results (Likert scale 1–5)**

| Indicator | Experimental (pre-test) | Experimental (post-test) | Δ | Interpretation |
|---|---|---|---|---|
| **Motivation to learn English** | 3.1 | 4.2 | +1.1 | High motivation |
| **Learning became more interesting** | 2.8 | 4.3 | +1.5 | Very high engagement |
| **Better understanding of mistakes** | 3.0 | 4.1 | +1.1 | High improvement |
| **More speaking practice** | 2.9 | 4.4 | +1.5 | Very high practice |
| **Communication has increased** | 2.7 | 4.0 | +1.3 | High confidence |
| **More study time with AI** | 3.0 | 4.1 | +1.1 | Higher involvement |
| **Recommendation to others** | 3.2 | 4.5 | +1.3 | Strong recommendation |
| **Personalised feedback** | 2.6 | 4.3 | +1.7 | Strongest effect |
| **AI impact** | 2.9 | 4.4 | +1.5 | Very positive |