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DEVELOPING CRITICAL THINKING IN EFL LEARNERS WITHOUT A LINGUISTIC BACKGROUND

DESENVOLVENDO O PENSAMENTO CRÍTICO EM ALUNOS DE INGLÊS COMO LÍNGUA ESTRANGEIRA SEM FORMAÇÃO LINGUÍSTICA

DESARROLLO DEL PENSAMIENTO CRÍTICO EN ESTUDIANTES DE INGLÉS COMO LENGUA EXTRANJERA SIN FORMACIÓN LINGÜÍSTICA

Tetiana HARBUZA[1]
t.garbuza@knute.edu.ua
Alla NYPADYMKA[2]
nypadymka@gmail.com
Olena OKHRIMENKO[3]
o.okhrimenko@knute.edu.ua
Svitlana MAMCHENKO[4]
switljana.m@gmail.com
Olena KULAZHENKO[5]
o.kulazhenko@knute.edu.ua

[1] PhD in Pedagogy, Associate Professor, Head of the Department of Modern European Languages, Faculty of International Trade and Law, State University of Trade and Economics, Kyiv, Ukraine.

[2] PhD in Philology, Associate Professor of the Department of Modern European Languages, Faculty of International Trade and Law, State University of Trade and Economics, Kyiv, Ukraine.

[3] PhD in Philology, Associate Professor of the Department of Modern European Languages, Faculty of International Trade and Law, State University of Trade and Economics, Kyiv, Ukraine.

[4] Senior Lecturer, Department of Modern European Languages, Faculty of International Trade and Law, State University of Trade and Economics, Kyiv, Ukraine.

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ABSTRACT: Developing critical thinking is an urgent task for modern education, especially in teaching English as a foreign language (EFL) to students of non-linguistic specialities who need a high level of analytical and communication skills for successful professional activity. The study aims to identify effective methods of developing critical thinking in students. The research methodology is based on an experimental approach, which includes dividing students into experimental and control groups, testing language skills before and after the course. The study results showed that active methods, such as debates, case analysis, project-based learning, and self-assessment, significantly improve students' critical thinking and language competence. In the speaking category, the performance increased from 48% to 85%, and in the writing category, from 64% to 83%, which confirms the effectiveness of interactive tasks. The developed methods can contribute to improving the quality of education and developing skills that are in demand in the labor market.

KEYWORDS: Critical thinking. English as a foreign language (EFL). Students of non-linguistic specialities. Interactive teaching methods. Case analysis. Self-assessment.

[5] Lecturer, Department of Modern European Languages, Faculty of International Trade and Law, State University of Trade and Economics, Kyiv, Ukraine.

RESUMO: *Desenvolver o pensamento crítico é uma tarefa urgente para a educação moderna, especialmente no ensino de inglês como língua estrangeira (EFL) a alunos de especialidades não linguísticas que precisam de um alto nível de competências analíticas e de comunicação para atuarem com sucesso na vida profissional. Este estudo busca identificar métodos eficazes para desenvolver o pensamento crítico desses alunos. A metodologia da pesquisa baseia-se em uma abordagem experimental, com a divisão dos alunos em grupos experimentais e de controle, testando as competências linguísticas antes e depois do curso. Os resultados mostraram que métodos ativos, como debates, análise de casos, aprendizagem baseada em projetos e autoavaliação, contribuem de forma significativa para o desenvolvimento do pensamento crítico e da competência linguística dos alunos. Na categoria de expressão oral, o desempenho subiu de 48% para 85%; na categoria de expressão escrita, passou de 64% para 83%, o que confirma a eficácia das tarefas interativas. Os métodos desenvolvidos podem contribuir para melhorar a qualidade da educação e fortalecer competências valorizadas no mercado de trabalho.*

PALAVRAS-CHAVE: *Pensamento crítico. Inglês como língua estrangeira (EFL). Estudantes de especialidades não linguísticas. Métodos de ensino interativos. Análise de casos. Autoavaliação.*

RESUMEN: *El desarrollo del pensamiento crítico es una tarea urgente para la educación moderna, especialmente en la enseñanza del inglés como lengua extranjera (EFL) a estudiantes de especialidades no lingüísticas que necesitan un alto nivel de habilidades analíticas y comunicativas para el éxito en su actividad profesional. El estudio tiene como objetivo identificar métodos eficaces para desarrollar el pensamiento crítico en estos estudiantes. La metodología de la investigación se basa en un enfoque experimental, que incluye la división de los estudiantes en grupos experimentales y de control, y la evaluación de sus habilidades lingüísticas antes y después del curso. Los resultados del estudio mostraron que los métodos activos, como los debates, el análisis de casos, el aprendizaje basado en proyectos y la autoevaluación, mejoran significativamente el pensamiento crítico y la competencia lingüística de los estudiantes. En la categoría de expresión oral, el rendimiento aumentó del 48 % al 85 %, y en la categoría de expresión escrita, del 64 % al 83 %, lo que confirma la eficacia de las tareas interactivas. Los métodos desarrollados pueden contribuir a mejorar la calidad de la educación y a desarrollar habilidades que son muy demandadas en el mercado laboral.*

PALABRAS CLAVE: *Pensamiento crítico. Inglés como lengua extranjera (EFL). Estudiantes de especialidades no lingüísticas. Métodos de enseñanza interactivos. Análisis de casos. Autoevaluación.*

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INTRODUCTION

Developing critical thinking is one of the key challenges in modern education, especially in teaching English as a foreign language (EFL) to students of non-language specialities. In the context of globalization and the growing need for interdisciplinary training, the ability to analyze, evaluate, and synthesize information is becoming strategically important for professionals in various fields. However, traditional methods of teaching English are often limited to the mechanical acquisition of vocabulary and grammar, which do not contribute to the development of the critical thinking necessary for successful communication and decision-making in a professional environment. It is evident from research that educating students through active learning methods and technological tools holds much promise in the domain of enhancing students' critical thinking skills. For instance, Bahador Sadeghi et al. (2014) and Kumar et al. (2023) draw attention to the application of metacognitive skills and self and peer evaluation in enhancing thinking skills. Benlaghrissi and Ouahidi (2024) demonstrate the efficiency of project-based learning by mobile technologies, and Muthmainnah et al. (2024) highlight the advantages of AI for individualisation.

Zhang et al. (2020) and Huang (2024a) assert that there is continued difficulty in teaching critical thinking because teachers are not well trained and there is limited incorporation of new strategies into the learning process. However, even today, the question of cultivating critical thinking among students other than language students remains underdeveloped. Thus, little is known about the effectiveness of using active methods with such students in the longer term and how the effectiveness of these approaches may be influenced by the students' disciplinary specialism. This gives rise to the need for further research that will help to link critical thinking skills to the use of English in academic and professional realms.

In this research, the objectives are to determine critical thinking methods that can help students enrolled in subjects and courses not related to language to advance critical thinking while studying EFL, to describe the effects of these methods on students' language development, and to provide guidelines for implementing them into the learning process.

Literature Review

This research aims to review recent articles highlighting the need for developing critical thinking in the context of TEFL, particularly among students from non-linguistic faculties. Finally, the study by Bahador Sadeghi et al. (2014) stresses metacognition strategies to enhance learner performance in rational data analysis, which aligns with Kumar et al. (2023), who identified self-assessment and peer assessment as ways of fostering critical thinking. Hirai et al. (2022) also drew similar conclusions, proposing a test to measure EFL learners' critical thinking abilities. The use of technology is a significant component of creative development and other aspects of

thinking. Benlaghrissi and Ouahidi's (2024) study proves the effectiveness of mobile-assisted project-based learning in developing students' speaking and analytical skills, while Muthmainnah et al. (2024) focus on the use of artificial intelligence to personalise the learning process and increase students' self-regulation. Similarly, Liu et al. (2023) emphasise the importance of technology in stimulating critical thinking in the context of writing and reflection.

A study on the cognitive-linguistic approach is presented by Tang (2024) and Reddy and Lakshmi (2024a), emphasising the need to apply critical thinking for better learning of language material. An important aspect is the interdisciplinary approach, which promotes students' formation of complex thinking (Morady Moghaddam, 2023; Tajeddin & Rezanejad, 2023; Schenck, 2020; Muhammad, 2020). The problems related to the lack of critical thinking among students of non-language specialities were investigated by Qinning Wu (2019), who proposed a solution by integrating tasks for analysing and evaluating texts. Similar results were observed in the study by Peungcharoenkun and Waluyo (2024), which analysed the impact of student interaction in traditional and online environments.

Among the studies focusing on teaching methods, it is worth mentioning Reddy and Lakshmi (2024b), who consider critical thinking tasks as a tool for developing professional and language skills, which is in line with the findings of Sherkuziyeva et al. (2023) on the effectiveness of computerised dynamic assessment in improving students' language performance. In order, consecutively, Huang (2024b) investigates the impact of self-assessment and ability grouping, emphasising the importance of motivational factors in developing critical thinking. Zhou (2024) highlights the advantages of digital game technologies in teaching EFL students, which allow them to develop critical thinking through interactive tasks. In the context of the critical thinking impact on different types of language activities, Zhang et al. (2020) found that EFL teachers in China consider critical thinking a key component of the learning process.

However, its teaching is often limited due to traditional methods. Do and Hoang (2024) also analyse the teaching of English to non-linguistic graduates in Vietnam and point out the difficulties in developing critical skills due to insufficient teacher training. Similar challenges are outlined by Arteaga and Valdiviezo (2022), who emphasise the need to improve digital competences among EFL teachers.

Zhang and Sheng (2021) and Yekta et al. (2024) investigate the role of lexical and listening strategies in enhancing critical thinking, proving that the integration of inductive and deductive thinking tasks positively impacts students' comprehension of texts. In their study, Tajeddin and Rezanejad (2023) highlighted the difference that an intercultural approach in teaching EFL can bring about, stimulating higher levels of analysis and critical thinking resulting from interdisciplinary discourses. Critical thinking has been the focal point of numerous researchers interested in enhancing the learning process. However, several questions remain unanswered. For instance, the enduring effects of critical thinking on the students'

accomplishment of non-language majors have been inadequately researched. Adapting methods to individual student needs and introducing technologies for personalised learning also require further study.

Research Methods

The study aimed to compare methods for enhancing the critical thinking of non-EFL learners while learning English as a foreign language. The study was conducted at three Ukrainian universities: Kyiv National University of Technology and Design, Kharkiv Petro Vasylenko National Technical University of Agriculture, and Lviv Polytechnic National University. The study involved 127 non-language students studying economics, engineering, and information technology. The participants were divided into two groups: experimental (64 students) and control (63 students). The experimental group studied under a modified program that included critical thinking tasks, such as discussions, cases, essays, and group assignments. The control group adopted the conventional method of teaching, in which the target language was English, aimed at mastering structures, individual words, and basic alphabets.

To evaluate the learning outcomes, pre- and post-experiment tests covered five language categories: grammar, vocabulary, reading capacity, writing, and speaking. The activities included text comprehension, essay writing, group discussion, and presentations. In addition, questionnaires and surveys (Appendices A and B) were utilised to assess the specifics of students' critical thinking before and after taking the course. The data obtained during the course of the present study were analysed using statistical techniques to compare the variables of the experimental and control groups.

RESULTS

The review of contemporary studies on students' critical thinking development, observing EFL students who do not focus on linguistics, evidences several essential strategies and practices. Let us consider the main approaches:

Metacognitive strategies: The research suggests that metacognitive strategies correlate with critical thinking in students. For instance, Bahador Sadeghi et al. (2014) noted that the use of such strategies facilitates the analysis of information and decision-making in the EFL classroom.

Mobile-assisted project-based learning for students: the possibilities: Benlaghrissi and Ouahidi (2024) demonstrated how the use of mobile technology in project-based learning enhances critical thinking through interactions involving writing, analysis, synthesis, and evaluation.

• *Self- and peer-assessment*: Self-regulated learning is another concept that shares many similarities with critical thinking. A study conducted by Kumar et al. (2023) revealed this.

According to the authors, such integration of self- and peer-assessment enhances students' critical thinking and problem-solving skills;

• *Integration of artificial intelligence*: Muthmainnah et al. (2024) emphasize the benefits of personalizing learning with AI technologies, increasing students' ability to analyze critically through an adaptive approach to task formation;

• *The role of the language environment and technology*: Liu et al. (2023) reveal the importance of using technology to increase students' engagement in the writing and reflection process. This allows students to analyse their knowledge more thoroughly.

Students who are not linguistics majors often face difficulties in developing critical thinking due to limited language skills. Integrating modern technologies, such as mobile applications and artificial intelligence, helps improve the efficiency of the learning process. Active engagement methods, including project-based learning, peer review, and discussions, are the most effective for developing critical thinking (Table 1).

Table 1 – Teaching methods for developing critical thinking in non-language students in the EFL context

Method	Description	Examples of tasks	Expected results
Project-based learning	Students complete long--term tasks that require research, analysis, and synthesis of information. The process involves planning, assigning roles, working in groups, and presenting results.	- Creating presentations on global issues; - Developing a video project about the cultural characteristics of different countries.	Deepening of analytical thinking and development of collaboration and presentation skills.
Discussions and debates	The teacher organises discussions on controversial topics to help students formulate arguments, evaluate alternative points of view, and develop evidence-based thinking skills.	- Debating the advantages and disadvantages of online education; - Discussing cultural differences through films or articles.	Development of argumentation, critical evaluation of facts, and communication skills.
Case analysis	The teacher offers real or fictional situations for students to analyse, evaluate alternative solutions, and choose the best one.	- Analysing a case study on ethical behaviour in business; -Developing recommendations for a travel company to serve customers from foreign countries.	Development of decision-making skills, information analysis, and application of knowledge in practical settings.

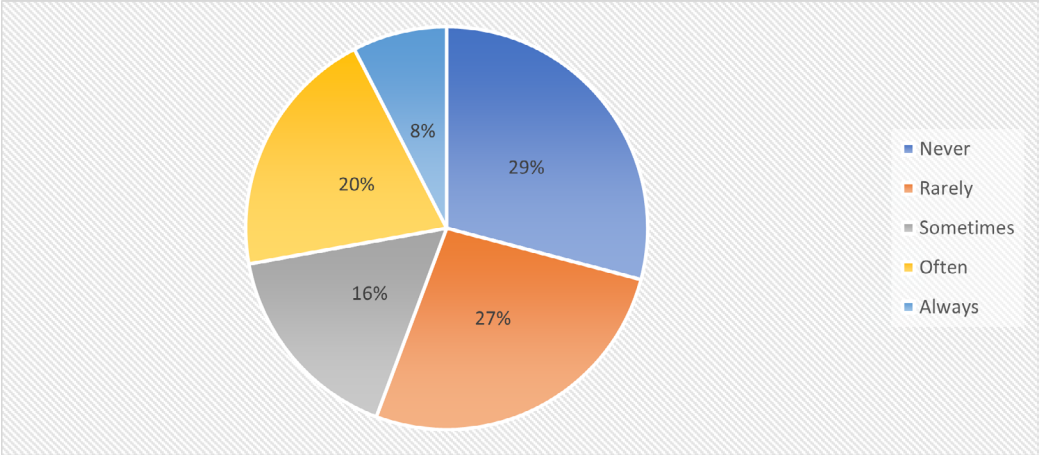
Self-esteem and mutual evaluation	The integration of self--assessment and peer assessment promotes critical thinking skills by enabling students to evaluate their own work and that of others against clear, established criteria.	- Evaluating another student's essay based on grammar, logic, and argumentation criteria; - Self-assessing the presentation to the group.	Increased self-awareness, reflection skills, and improvement of work based on constructive criticism.
Technological tools	The use of digital technologies, such as automated assessment platforms, personalised assignments, or interactive courses, stimulates critical thinking.	- Writing essays on a platform with automatic text analysis; - Performing text analysis tests using digital tools.	Development of reflective thinking, analytical skills, and digital literacy.
Interdisciplinary approach	The integration of knowledge from other disciplines (history, culture, sciences) allows students to consider problems from different perspectives and develop a deeper understanding.	- Analysing historical events through English sources; - Completing a project on the impact of technology on modern culture.	Formation of complex thinking and understanding of interdisciplinary connections.
Cognitive-linguistic approach	Teaching language structures in the context of their practical application fosters analysis, argumentation, and critical evaluation.	- Performing text analysis tasks using cognitive strategies; - Identifying errors in the logic of the text's argumentation.	Development of cognitive skills and improvement of language competence.

Source: compiled by the author based on Benlaghrissi and Ouahidi (2024), Kumar et al. (2023), Liu et al. (2023), Morady Moghaddam (2023), Tang and Ma (2024), Hirai et al. (2022), Giese (2024).

A total of 127 nonlanguage students from three Ukrainian universities took part: Kyiv National University of Technology and Design (39 students), Petro Vasylenko National Technical University of Agriculture in Kharkiv (44 students), and Lviv National Polytechnic University (44 students). The participants were undergraduates in the fields of economics, engineering, and information technology. This analysis made it possible to identify the benefits of critical thinking techniques and draw up practical recommendations for their future implementation.

The main indicators assessed were: performance in tasks requiring critical thinking (essays, debates, and projects), results in language tests (focusing on productive skills such as writing and speaking), and changes in students' perceptions of the use of critical thinking in the learning process (Figure 1).

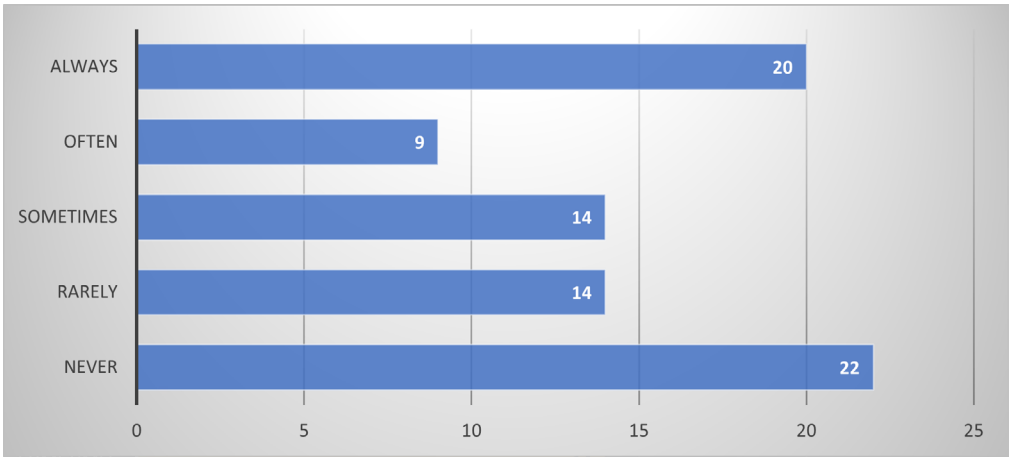
Figure 1 – Frequency of text analysis by students



Source: compiled by the author based on Benlaghrissi and Ouahidi (2024), Kumar et al. (2023), Liu et al. (2023), Morady Moghaddam (2023), Tang and Ma (2024), Hirai et al. (2022), Giese (2024).

The results show that many students rarely or never use textual analysis in their learning process. In particular, 24% of students indicated that they never use textual analysis, and another 21% chose the answer "Rarely." Only 16% of students use textual analysis "Often," and only 6% do so "Always." The figure for "Sometimes" was 12%, indicating a certain inconsistency in the application of these skills. These results indicate an insufficient level of practical tasks aimed at developing text analysis in the curriculum. The low proportion of students who use analysis regularly highlights the need to integrate critical analysis tasks, primarily through interpretation, comparison, and evaluation of information in the classroom (Figure 2).

Figure 2 – Frequency of formulating arguments by students

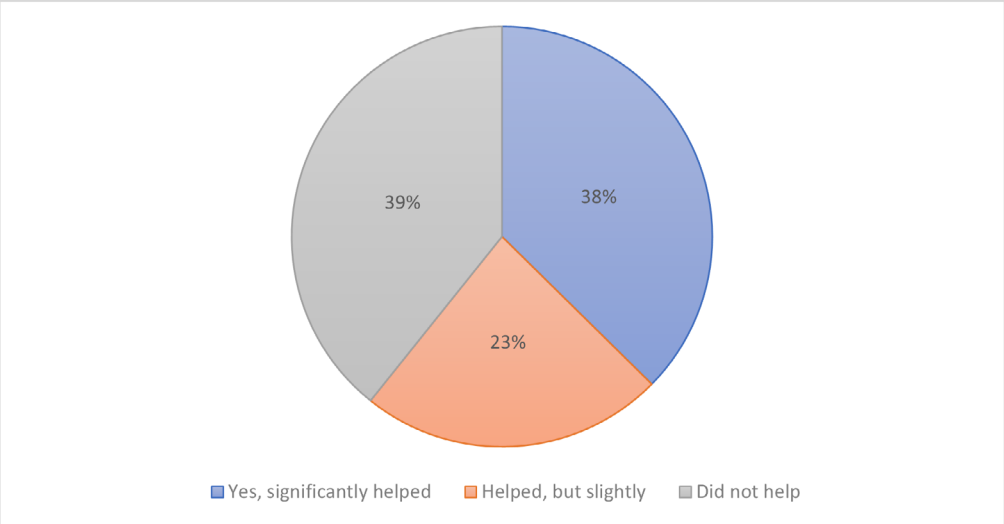


Source: complied by authors.

The results show that many students have difficulty formulating arguments regularly. For example, 22% of students never formulate arguments—the highest rate among all

categories. At the same time, 20% of students said they always use arguments in their studies. The figures for the “Rarely” and “Sometimes” categories are 13% each, while only 10% of students formulate arguments “Often.” This distribution indicates considerable potential for improving argumentation skills, mainly through the integration of analysis and discussion tasks. The high proportion of students who “Never” or “Rarely” formulate arguments indicates the need for greater attention to tasks that develop logical thinking and communication skills (Figure 3).

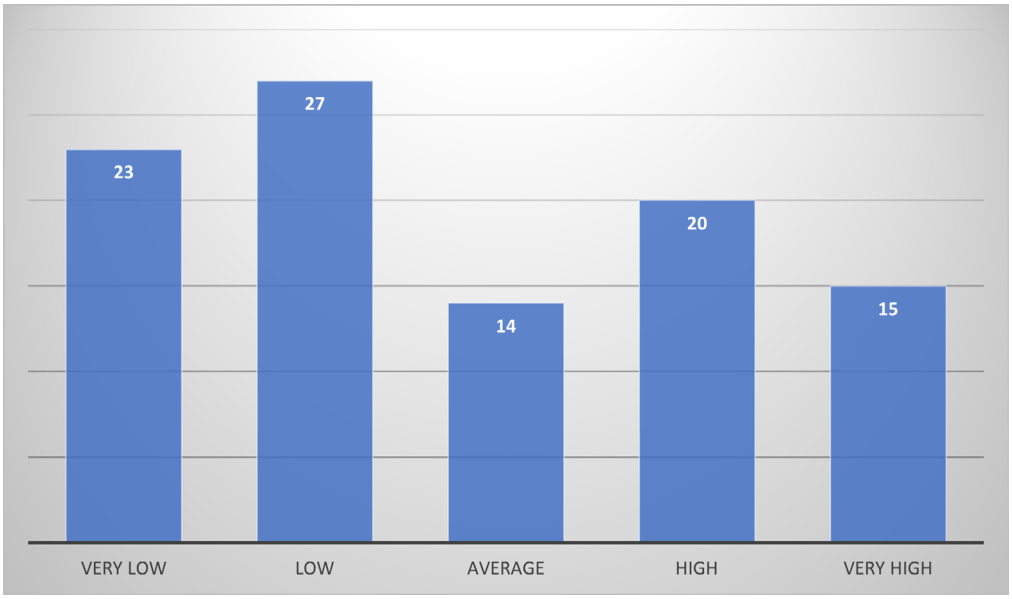
Figure 3 – The impact of critical thinking skills on English language performance



Source: complied by authors.

The results show a mixed impact of critical thinking on English language performance. Forty percent of students said that critical thinking skills “Helped a lot,” which confirms the effectiveness of using interactive methods in the learning process. At the same time, 25% of respondents said these skills “Helped, but not much,” which may indicate a lack of practical adaptation of new approaches to specific tasks. It is worth noting that another 35% of students said that critical thinking “Did not help,” indicating the need for an individual approach to learning or additional explanation of its practical usefulness for completing assignments. These results highlight that, while the introduction of critical thinking has had a positive impact, there is still room for optimising teaching methods and better aligning them with English language tasks.

Figura 4 – Students' assessment of critical thinking before the start of the course

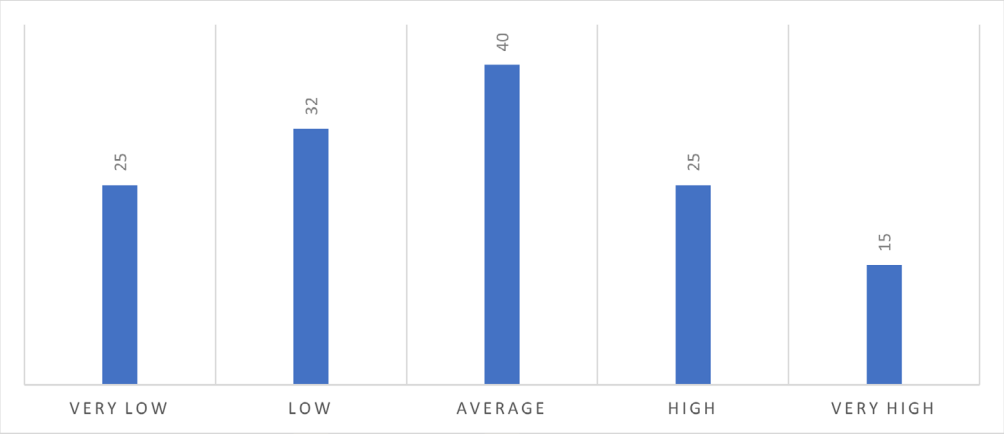


Source: complied by authors.

According to the survey results, 27% of students indicated that their level of critical thinking was "Low." This is the highest rate among all categories, indicating widespread difficulties in applying analysis and argumentation skills. A slightly smaller but still significant percentage—namely, 23%—chose the "Very Low" category, which indicates that critical thinking skills were not sufficiently developed at the initial stage. The "High" category was chosen by 20% of students, demonstrating that some respondents had a certain level of skill. At the same time, only 15% of participants indicated a "Very High" level, emphasising the small number of students with confident critical thinking abilities. The average level, marked as "Average," was chosen by 14% of students (Figure 4).

The predominance of the "Low" and "Very Low" categories can be explained by traditional methods of teaching English to students of non-linguistic specialities, which are primarily focused on memorising lexical and grammatical structures. Learning tasks often do not involve analysing, comparing, or synthesising information—which are the basis of critical thinking. These findings highlight the need to integrate active learning methods such as debate, case analysis, and project-based learning. The introduction of such approaches will contribute to the gradual increase in students' level of critical thinking in the following stages of education.

Figure 5 – Students' assessment of critical thinking after completing the course

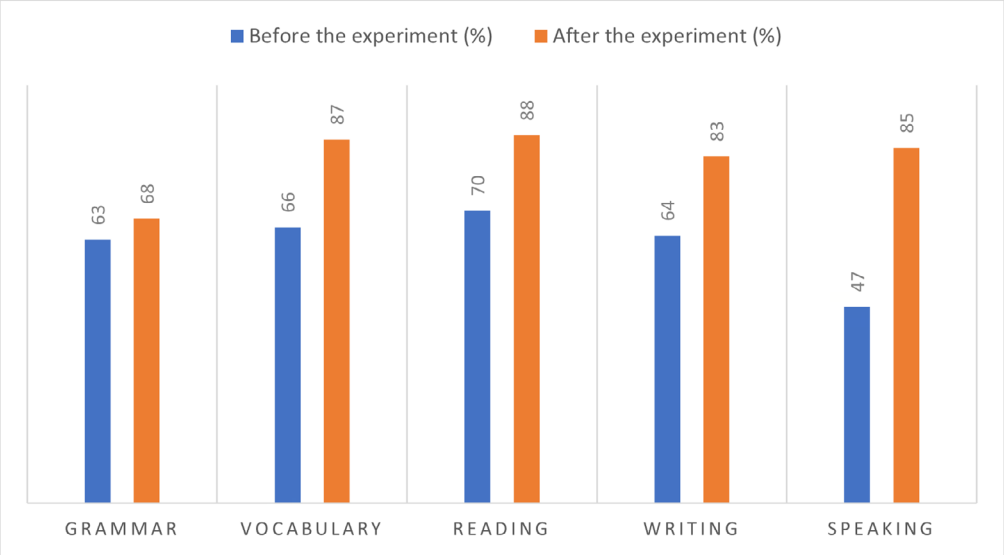


Source: complied by authors.

After introducing critical thinking techniques, positive changes occurred: 40% of students rated their skills as "Average," while 23% rated them as "High" (Figure 5). The proportion of students with a "Low" level decreased to 31%, demonstrating the effectiveness of interactive methods such as case analysis and debate. At the same time, 23% of students remained in the "Very Low" category, indicating the need for additional support. Overall, the results confirm the progress in developing critical thinking through the implementation of active learning methods.

The results of an experimental study conducted among students of non-linguistic specialities at three Ukrainian universities—Kyiv National University of Technology and Design, Kharkiv Petro Vasylenko National Technical University of Agriculture, and Lviv Polytechnic National University—are shown in Figure 6. The study included testing students before the course (baseline data) and after the course, with the integration of critical thinking techniques. The testing covered five categories of language skills: grammar, vocabulary, reading, writing, and speaking. The tasks were designed according to the level of English proficiency and included text analysis, discussions, written essays, and oral presentations. The results were processed statistically, and the average values for each category are presented as percentages. The comparison between the pre- and post-experiment results allows us to record the growth of indicators and the effectiveness of using interactive methods aimed at developing students' critical thinking.

Figure 6 – Comparison of test results before and after the experimente



Source: complied by authors.

The graph (Figure 6) shows a significant improvement in students' performance across all five categories of language skills after the introduction of critical thinking techniques. In the grammar category, there was an increase from 63% to 68%, reflecting improved understanding of the rules and their application. The most significant growth was observed in vocabulary and reading, which rose from 65% to 88% and from 70% to 87%, respectively, due to text analysis and contextual understanding tasks. In the writing category, the score increased from 64% to 83%, indicating development in argumentation and structured expression skills. The most impressive progress was in speaking, which rose from 48% to 85%, confirming the effectiveness of interactive methods such as discussions and debates. The overall results demonstrate the positive impact of critical thinking methods on the development of language skills among students of non-linguistic specialities.

After implementing the interactive methods, a Student's *t*-test for paired samples was used to test the statistical significance of the changes in students' language skills. This criterion allows us to assess whether the difference between the mean values before and after the experiment is statistically significant. The analysis was carried out in several stages:

Before and after the experiment, mean values were collected for five categories of language skills: grammar, vocabulary, reading, writing, and speaking.

Results:

- Before the experiment: [63, 65, 70, 64, 48];
- After the experiment: [68, 88, 87, 83, 85].

Formulation of hypotheses:

• $H(_0)$ (null hypothesis): There is no statistically significant difference between the mean values before and after the experiment;

• $H(_1)$ (alternative hypothesis): The mean values before and after the experiment are statistically significantly different.

The formula for the t-test for linked samples:

$$t = \frac{D_{aver}}{SE_D} \qquad (1)$$

D_{aver} – average value of differences between observations
SE_D – standard error of diferences

$$SE_D = \sqrt{\frac{\sum(D-D_{aver})^2}{n(n-1)}} \qquad (2)$$

Data for the experiment:

$$X_{before} = [63,65,70,64,48] \qquad (3)$$

Data after the experiment:

$$X_{afer} = [68,88,87,83,85] \qquad (4)$$

Number of observations (*n=5*).
Calculation of differences (D):

$$D = X_{before} - X_{after} \qquad (5)$$

$$D = [63-68,65-88,70-87,64-83,48-85] \qquad (6)$$

$$D = [-5,-23,-17,-19,-37] \qquad (7)$$

The average value of differences:

$$D_{aver} = \frac{\sum D}{n} \qquad (8)$$

$$D_{aver} = \frac{-5+(-23)+(-17)+(-19)+(-37)}{5} \qquad (9)$$

$$D_{aver} = \frac{-101}{5} = -20,2 \qquad (10)$$

Calculation of the standard error (SE_D):

1. Deviation from the average:

$$D - D_{aver} = [-5 + 20.2, -23 + 20.2, -17 + 20.2, -19 + 20.2, -37 + 20.2] \quad (11)$$

$$D - D_{aver} = [15.2, -2.8, 3.2, 1.2, -16.8] \quad (12)$$

2. Squares of the deviations:

$$(D - D_{aver})^2 = [15.2^2, -2.8^2, 3.2^2, 1.2^2, -16.8^2] \quad (13)$$

$$(D - D_{aver})^2 = [231.04, 7.84, 10.24, 1.44, 282.24] \quad (14)$$

3. Sum of squared deviations:

$$\sum(D - D_{aver})^2 = 231.04 + 7.84 + 10.24 + 1.44 + 282.24 = 532.8 \quad (15)$$

4. Standard error:

$$SE_D = \sqrt{\frac{\sum(D-D_{aver})^2}{n(n-1)}} = \sqrt{\frac{532.8}{20}} = \sqrt{26.64} \approx 5.16 \quad (16)$$

5. Calculation of the *t*-test:

$$t = \frac{D_{aver}}{SE_D} = \frac{-20.2}{5.16} \approx -3.91 \quad (17)$$

Here are the results:

t=-3.91 (18)

Level of significance: p = 0.017 (19)

Since $p < 0.05$, the changes in the results after the experiment are statistically significant. The largest increase is observed in the categories of vocabulary and speaking, which confirms the effectiveness of interactive methods.

Based on the study, we outline the following recommendations for teachers on how to integrate critical thinking practices into English language curricula:

- *Use of text analysis tasks*: Proposed tasks should include critical analysis of texts, identification and evaluation of key concepts and claims, and assessment of the credibility of information sources. Students should learn to compare different sources, recognize logical fallacies, and draw conclusions from datasets. This practice enhances content analysis and fosters analytical thinking; therefore, it is considered;
- *Holding debates and discussions*: teachers should conduct periodic debates in which they discuss issues that demand a specific perspective and provide reasons for their

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opinions. The discussions should be combined with the creation of pros and cons lists, which will help develop critical thinking and eloquence skills. This practice assists students in applying critical thinking skills in their speech activities;

- *Project-based learning:* implementing group projects allows students to research real-world problems, analyze information, and propose practical solutions. Projects can include creating presentations, videos, or reports in English, which combine critical thinking with language skills. Such work fosters teamwork and responsibility;
- *Use of the case method*: working with cases involves analyzing real or fictional situations in which students must find solutions and justify their choices. Teachers can use cases from business, technology, or social topics, adapted to the students' language levels. This method helps develop problem-solving skills and the application of knowledge in practical settings.

DISCUSSION

The results of the study show that integrating critical thinking techniques—such as debate, case analysis, and project-based learning—positively impacts non-language students' performance in learning English. A comparison of the test results before and after the experiment shows significant progress in the categories of writing and speaking (from 64% to 83% and from 48% to 85%, respectively). These changes confirm the hypothesis that active learning methods effectively develop critical thinking. Our results align with the study by Kumar et al. (2023), who emphasised the importance of self-assessment and peer assessment in enhancing students' critical thinking. Similarly, Benlaghrissi and Ouahidi (2024) showed that mobile-assisted project-based learning promotes the development of information analysis and synthesis skills. However, in contrast to Liu et al. (2023), who utilized technology for writing, our results highlight the significant role of oral communication through debate.

Possible reasons for the effectiveness of interactive methods are their focus on the practical application of language skills and the stimulation of reflection. Participants in the experimental group had more opportunities to apply the knowledge they had acquired in real-life situations, which increased their engagement and productivity. The similarity of our results to those of Bahador Sadeghi et al. (2014) can be explained by the use of metacognitive strategies that stimulate self-awareness in the learning process. The contradiction with the results of Muthmainnah et al. (2024), who emphasise the benefits of AI technologies, can be explained by the context of our study, in which technological tools were used to a limited extent.

Limitations include the small sample size (127 students) and the focus on three universities in Ukraine, which makes it difficult to generalise the results to a broader audience.

Also, the teaching methods may have required additional adaptation to the students' levels. Overall, the results show that active methods—such as debates, case studies, and project--based learning—significantly increase the level of critical thinking and language competence of students of non-language majors. Teachers are encouraged to integrate text analysis tasks, debates, and project work into the curriculum to stimulate critical thinking. Further research could focus on the long-term effects of introducing critical thinking and the impact of different technological tools on the development of these skills.

FINAL CONSIDERATIONS

The proposed methods for developing critical thinking, such as debate, case analysis, and project-based learning, have demonstrated their effectiveness in improving the level of critical thinking and language competence among students of non-language majors. The most significant progress was observed in the categories of writing and speaking, which confirms the importance of practical tasks in the learning process. The novelty of the study lies in the combination of critical thinking with the development of language skills through active forms of learning, which differs from traditional EFL teaching methods that focus on memorizing vocabulary and grammar. The practical significance of the results lies in the possibility of adapting the presented methods for students of different specialities in order to increase their engagement and academic success.

Despite the positive outcomes, the study has limitations, such as the small sample size and the focus on three Ukrainian universities, which makes it difficult to generalise the findings to a broader context. In addition, introducing interactive methods requires time for both students and teachers to adapt. Further research could aim at a long-term evaluation of the effectiveness of critical thinking in English language learning and at integrating digital tools and artificial intelligence for personalised learning. It is recommended to develop new programmes that combine an interdisciplinary approach and interactive technologies to stimulate critical thinking in various educational contexts.

REFERENCES

Arteaga, M., & Valdiviezo, E. (2022). Digital competence among students of pedagogy and EFL teacher-students in Ecuador: A review of the existing literature. In Tomczyk, Ł., & Fedeli, L. (Eds.), *Digital literacy for teachers* (pp. 243–270). Springer. https://doi.org/10.1007/978-981-19-1738-7_13

Bahador Sadeghi, B., Hassani, M. T., & Rahmatkhah, M. (2014). The relationship between EFL learners' metacognitive strategies and their critical thinking. *Journal of Language Teaching and Research, 5*(5), 1167–1175. https://doi.org/10.4304/jltr.5.5.1167-1175

Benlaghrissi, H., & Ouahidi, L. M. (2024). The impact of mobile-assisted project-based learning on developing EFL students' speaking skills. *Smart Learning Environments, 11*, 18. https://doi.org/10.1186/s40561-024-00303-y

Do, Q., & Hoang, H. T. (2024). The construction of language teacher identity among graduates from non-English language teaching majors in Vietnam. *English Teaching & Learning, 48*, 485–502. https://doi.org/10.1007/s42321-023-00142-z

Giese, L. L. (2024). Online Shakespeare: Beneficial learning experiences for non-majors. In Sasser, M. T., & Atwood, E. K. (Eds.), *Teaching Shakespeare beyond the major* (pp. 213–230). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-24224-3_12

Hirai, A., Oka, H., & Kato, T. (2022). Development and validation of an English test measuring EFL learners' critical thinking skills. *Language Testing in Asia, 12*, 45. https://doi.org/10.1186/s40468-022-00193-2

Huang, I. C. (2024a). A symbolic interactionist perspective on EFL students' attitudes towards ability grouping. *English Teaching & Learning*. https://doi.org/10.1007/s42321-024-00174-z

Huang, W. C. (2024b). Influence of enhanced self-efficacy on English performance through English medium instruction: A mixed methods research. *Asian Journal of Second and Foreign Language Education, 9*, 32. https://doi.org/10.1186/s40862-024-00255-3

Kumar, T., Soozandehfar, S. M. A., & Hashemifardnia, A. (2023). Self vs. peer assessment activities in EFL-speaking classes: Impacts on students' self-regulated learning, critical thinking, and problem-solving skills. *Language Testing in Asia, 13*, 36. https://doi.org/10.1186/s40468-023-00251-3

Liu, C. C., Liu, S. J., & Hwang, G. J. (2023). Engaging EFL students' critical thinking tendency and in-depth reflection in technology-based writing contexts: A peer assessment-incorporated automatic evaluation approach. *Education and Information Technologies, 28*, 13027–13052. https://doi.org/10.1007/s10639-023-11697-6

Morady Moghaddam, M. (2023). An intercultural approach to English language teaching. *International Review of Education, 69*, 747–752. https://doi.org/10.1007/s11159-023-10048-4

Muhammad, Z. H. M. (2020). Mobile-assisted language learning for developing critical reading skills of EFL university students. *Cdelt Occasional Papers: In the Development of English Language Education, 69*(1), 225–250. https://doi.org/10.21608/opde.2020.145639

Muthmainnah, M., Cardoso, L., Alsbbagh, Y. A. M. R., Al Yakin, A., & Apriani, E. (2024). Advancing sustainable learning by boosting student self-regulated learning and feedback through AI-driven personalisation in EFL education. In Alnoor, A., Camilleri, M., Al-Abrrow, H. A., et al. (Eds.), *Explainable artificial intelligence in the digital sustainability administration* (pp. 45–63). Springer. https://doi.org/10.1007/978-3-031-63717-9_3

Peungcharoenkun, T., & Waluyo, B. (2024). Students' affective engagements in peer feedback across offline and online English learning environments in Thai higher education. *Asian Journal of Second and Foreign Language Education, 9*, 60. https://doi.org/10.1186/s40862-024-00286-w

Qinning Wu (2019). The solutions to "lack of critical thinking" for non-English majors' students. *Proceedings of ICEM 2019* (pp. 351–356). https://doi.org/10.2991/icem-18.2019.116

Reddy, K. V., & Lakshmi, G. S. (2024a). Tasks for critical thinking and language learning. In Reddy, K. V., & Lakshmi, G. S. (Eds.), *Critical thinking for professional and language education* (pp. 63–79). Springer. https://doi.org/10.1007/978-3-031-37951-2_4

Reddy, K. V., & Lakshmi, G. S. (2024b). Teaching critical thinking. In Reddy, K. V., & Lakshmi, G. S. (Eds.), *Critical thinking for professional and language education* (pp. 15–32). Springer. https://doi.org/10.1007/978-3-031-37951-2_2

Schenck, A. (2020). Examining the influence of native and non-native English-speaking teachers on Korean EFL writing. *Asian Journal of Second and Foreign Language Education, 5*(2). https://doi.org/10.1186/s40862-020-00081-3

Sherkuziyeva, N., Imamutdinovna Gabidullina, F., & Ibrahim, K. A. A. A. (2023). The comparative effect of computerised dynamic assessment and rater mediated assessment on EFL learners' oral proficiency, writing performance, and test anxiety. *Language Testing in Asia, 13*, 15. https://doi.org/10.1186/s40468-023-00227-3

Tajeddin, Z., & Rezanejad, A. (2023). Critical intercultural language teaching: Moving from beliefs to instructional practices in EFL classrooms. In Sahlane, A., & Pritchard, R. (Eds.), *English as an international language education* (pp. 15–28). Springer. https://doi.org/10.1007/978-3-031-34702-3_2

Tang, C. (2024). Cognitive linguistics: Fostering English language proficiency in higher education. *Asia-Pacific Education Researcher, 34*, 15–28. https://doi.org/10.1007/s40299-024-00833-6

Tang, Y., & Ma, X. (2024). Enhancing EFL vocabulary acquisition through computational thinking. In Zhao, F., & Miao, D. (Eds.), *AI-generated content. AIGC 2023* (pp. 127–140). Springer. https://doi.org/10.1007/978-981-99-7587-7_6

Yekta, R. R., Alighadr, N., & Pournia, S. (2024). Effects of inductive and deductive aural vocabulary pre-teaching on EFL learners' word recognition from speech. *Cognitive Processing, 26*, 75–89. https://doi.org/10.1007/s10339-024-01232-x

Zhang, D., & Sheng, D. (2021). EFL lecturers' metadiscourse in Chinese university MOOCs across course types. *Corpus Pragmatics, 5*, 243–270. https://doi.org/10.1007/s41701-021-00098-0

Zhang, H., Yuan, R., & He, X. (2020). Investigating university EFL teachers' perceptions of critical thinking and its teaching: Voices from China. *Asia-Pacific Education Researcher, 29*, 483–493. https://doi.org/10.1007/s40299-020-00500-6

Zhou, S. (2024). Gamifying language education: The impact of digital game-based learning on Chinese EFL learners. *Humanities and Social Sciences Communications, 11*, 1518. https://doi.org/10.1057/s41599-024-04073-3

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APPENDIX A

Questionnaire

1) How would you rate your level of critical thinking before and after the course (on a scale of 1 to 5)?

- 1 (Very low)
- 5 (Very high)

2) How often do you use the following skills when learning English? (Circle the answer)

- Text analysis (Never / Rarely / Sometimes / Often / Always)
- Formulation of arguments (Never / Rarely / Sometimes / Often / Always)

3) Have critical thinking skills helped you to perform better in English?

- Yes, they helped a lot
- They helped, but only slightly
- They did not help

4) What teaching methods have contributed most to the development of your critical thinking?

- Projects
- Debate
- Case analysis
- Other (please specify): _____

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APPENDIX B
Testing

1) Analysing the text: Read the text and complete the activities.

Text: "*The impact of technology on education*."

Tasks:

- Identify the main idea of the text.
- Identify two arguments that support the main idea.
- Write whether you agree or disagree with the author, justifying your point of view (150 words).

2) Written assignment (essay): Topic: "*How critical thinking can improve communication in a multicultural workplace*."

Instructions:

- Identify three aspects that are key to the topic.
- Support each aspect with examples.
- Use the following structure: introduction, body, and conclusion (300 words).

3) Discussion task (preparation for the debate): Topic: "*Online education is more effective than traditional education*."

Instructions:

- Formulate three arguments in favour.
- Predict three possible counterarguments and offer answers to them.