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Strategies for developing critical thinking through blended foreign language learning

Estrategias para desarrollar el pensamiento crítico a través del aprendizaje mixto de idiomas

Ümit Yildiz
Akdeniz University, Associate Professor, Antalya, Turkey.
https://orcid.org/0000-0003-0415-8051
umityildiz122@gmail.com

Iryna Hotsynets
Drohobych Ivan Franko State Pedagogical University, PhD in Philology, Associate Professor, Drohobych, Lviv region, Ukraine.
https://orcid.org/0000-0002-8201-2712
ihotsynets@gmail.com

Myroslava Sosiak
Drohobych Ivan Franko State Pedagogical University, PhD in Pedagogical Sciences, Associate Professor, Drohobych, Lviv region, Ukraine.
https://orcid.org/0000-0002-5870-4831
myrsosiak@gmail.com

Olena Diachenko
National Technical University «Kharkiv Polytechnic Institute», Lecturer, Kharkiv, Ukraine.
https://orcid.org/0000-0003-1749-5305
odiachenko@gmail.com

Larysa Volovyk
Poltava State Agrarian University, PhD in Philology, Associate Professor, Poltava, Ukraine.
https://orcid.org/0000-0002-0423-0917
larysa13.b@gmail.com

Abstract

The relevance of the study is determined by the need to implement modern educational technologies that develop students' critical thinking when studying foreign languages. The aim of the research was to investigate the impact of the blended learning on the development of these skills. The research employed the following methods: questionnaire surveys, testing, comparative analysis, observation, and pedagogical experiment. Testing was carried out using the Watson-Glaser Critical Thinking Appraisal (WGCTA) and California Critical Thinking Disposition Inventory (CCTDI) methods, as well as statistical analysis of the results. The results showed that students in the experimental group improved their critical thinking scores by +7.8 points, while the increase was only +2.6 points in the control group. It was concluded that blended learning effectively contributes to the development of cognitive skills through a combination of traditional and digital methods. The academic novelty is the identified key components of blended learning that have the greatest impact on critical thinking, such as reflective tasks and multimedia projects. Further research prospects include the integration of mobile technologies and the analysis of their impact on other aspects of the educational process.

Keywords: blended learning, critical thinking, development methods, educational strategies, foreign languages.

Strategies for developing critical thinking through blended foreign language learning - Eduweb, 2025, julio-septiembre, v.19, n.3. / 315-327

315

Resumen

La pertinencia del estudio viene determinada por la necesidad de aplicar tecnologías educativas modernas que desarrollen el pensamiento crítico de los estudiantes al estudiar lenguas extranjeras. El objetivo de la investigación era investigar el impacto del aprendizaje mixto en el desarrollo de estas competencias. La investigación empleó los siguientes métodos: cuestionarios, pruebas, análisis comparativo, observación y experimentación pedagógica. Las pruebas se realizaron utilizando los métodos Watson-Glaser Critical Thinking Appraisal (WGCTA) y California Critical Thinking Disposition Inventory (CCTDI), así como el análisis estadístico de los resultados. Los resultados mostraron que los estudiantes del grupo experimental mejoraron sus puntuaciones de pensamiento crítico en +7,8 puntos, mientras que el aumento fue solo de +2,6 puntos en el grupo control. Se llegó a la conclusión de que el aprendizaje combinado contribuye eficazmente al desarrollo de las competencias cognitivas mediante una combinación de métodos tradicionales y digitales. La novedad académica son los componentes clave identificados del aprendizaje combinado que tienen el mayor impacto en el pensamiento crítico, como las tareas reflexivas y los proyectos multimedia. Otras perspectivas de investigación incluyen la integración de las tecnologías móviles y el análisis de su impacto en otros aspectos del proceso educativo.

Palabras clave: aprendizaje combinado, estrategias educativas, lenguas extranjeras, métodos de desarrollo, pensamiento crítico.

Introduction

Critical thinking (CT) is one of the key competencies that ensures students' successful integration into the globalized world. This is especially true for learning foreign languages, where the ability to analyse, evaluate, and synthesize information plays an important role. Blended learning, which combines traditional methods with digital technologies, creates new opportunities for the development of these skills. According to an OECD study, about 70% of students in countries with a developed education system use blended learning, which significantly increases their cognitive abilities (Yukhymenko et al., 2024). In Latin America, research on content and language integrated learning (CLIL) over the past decade demonstrates how innovative approaches to foreign language education can foster higher-order thinking skills, including CT (Banegas et al., 2020). Their analysis highlights successful strategies for integrating subject knowledge with language learning, offering valuable insights that can inform adaptations of blended learning in other educational contexts.

At the global level, addressing such problems focuses on several key tasks. First, it is necessary to ensure equal access to quality education through investment in educational infrastructure, including technology and educational materials. Second, it is important to develop universal educational models that combine traditional methods with innovative approaches, such as interactive learning and online platforms. Third, teacher training should be improved through international experience exchange programmes and certification courses focused on the development of digital literacy and pedagogical skills. Fourth, it is necessary to actively support research in the field of educational technologies to create effective tools that will promote the development of critical thinking. Cooperation between countries will allow creating common standards for assessing CT and establishing best practices for their implementation in different education systems.

Aim: identify and substantiate effective strategies for developing students' CT through blended learning.

Empirical objectives:

– Determine the impact of blended learning on the development of students' critical thinking;
– Assess the effectiveness of interactive online tools in the formation of critical thinking;
– Study students' perception of blended learning.

Literature Review

In their study, the authors Ivancu et al. (2023) emphasize the importance of CT in the face of modern challenges such as the spread of fake news, disinformation and manipulation. They note that CT contributes to the analysis, organization, and interpretation of information, and is also a key element in the creation of effective curricula. The main problem is that CM skills are mostly taught implicitly, and are only rarely integrated into educational programmes clearly and consistently (D'Argenio, 2022; Guzmán-Valenzuela et al., 2023). The authors use Peter-Facione's model to analyse the effectiveness of CT implementation, which includes basic cognitive skills (interpretation, analysis, evaluation, explanation, inference, and self-regulation), and corresponding sub-skills.

Supporting this opinion, Ubilla-Rosales et al., (2020) emphasizes the role of blended learning in developing students' CT and communication skills. The author suggests integrating technologies such as blogs, virtual discussions, and multimedia to increase student engagement and stimulate the development of CT skills. In turn, Akramova & Akramova. (2021) pay close attention to the teacher's role as a mentor who supports students, coordinates their work, and provides feedback. Lin et al. (2024), Hasanah & Malik (2020) disagrees with this opinion and emphasizes that the successful implementation of blended learning depends on students' adaptation to new conditions and their ability to work independently.

Yang et al. (2022) and Alshaye (2021) propose a new approach to developing critical reading that combines mobile learning, blended learning, and active learning (MBALL). They emphasize that mobile learning provides flexibility and continuous access to materials, while active learning engages students in practical tasks and discussions. Authors combine different methods to achieve better results. Similarly, Salas-Pilco et al. (2022), in their systematic review of Latin American higher education during the COVID-19 pandemic, highlight that effective online and blended learning environments depend on student engagement, which is enhanced through interactive tools and participatory activities.

Rico et al. (2023) present experimental evidence from the Colombian Caribbean demonstrating that simulation-based instruction substantially improves students' critical thinking skills, emphasizing the effectiveness of interactive, practice-oriented methods in fostering these abilities.

The development of critical thinking in the context of blended learning is a central theme of many studies (Cáceres et al., 2020, Giri & Paily, 2020, and others). For example, Rombout et al. (2022), Prat-Sala, & van Duuren (2020) explore general principles for integrating CT into blended learning approaches, in particular emphasizing the importance of students' cognitive engagement. Payan-Carreira et al. (2022) emphasize the need to adapt teaching materials to ensure an interactive and personally focused approach. Teng & Zeng (2022) study the effectiveness of integrating CT strategies in English language courses. Heard et al. (2020) also emphasize the importance of combining online materials with face-to-face discussions, which creates an interactive learning environment.

Jaswal and Behera (2023) argue that blended learning promotes the development of CT through students' collaborative work in small groups and the integration of online resources. Meirbekov et al. (2022), also agrees with this opinion, while emphasizing the importance of social interaction to create a learning environment that promotes students' cognitive and emotional engagement. This contrasts with other studies that focus on the technical aspects of organizing blended learning (Bernhardt, & Richmond, 2021; Konotop et al., 2023).

In contemporary Latin American research, there is a shared position regarding the effectiveness of blended learning as a means of fostering critical thinking in English language teaching. For instance, Tamayo Cano et al. (2023) emphasize the importance of considering teachers' and administrators' needs for the successful design of blended learning programs, while Roberto-Flórez et al. (2022) demonstrate the potential of scenario-based approaches to develop critical thinking in online legal English classes. Arboleda García and Naranjo Andrade (2025) highlight the value of project-based learning for the joint development of critical thinking and communicative skills among young EFL learners. Caro-Torres et al. (2021) discuss

Strategies for developing critical thinking through blended foreign language learning - Eduweb, 2025, julio-septiembre, v.19, n.3. / 315-327

317

the blended-flipped model as a tool for personalization and metacognitive growth, directly supporting critical thinking in higher education students, whereas López-Novoa & colleagues (2020) stress the competency-based approach as a methodological foundation for embedding critical thinking in university education. The review by Mora-Aranda & Velásquez-Cueva (2022) confirms the effectiveness of blended learning in secondary education, while pointing out the lack of empirical evidence in the region. Collectively, these studies demonstrate that regardless of educational level or specific strategy, the combination of traditional and digital methods provides broad opportunities for cultivating critical thinking in the EFL context.

So, the literature review demonstrates that researchers agree on the effectiveness of blended learning for the CT development. However, there are differences in emphasis: some studies focus on technical tools and digital literacy of teachers, while others emphasize the importance of social interaction and practical tasks. Nevertheless, most of these studies have several limitations. Many of them are conducted with small or non-representative samples, which restricts the generalizability of their findings. Others analyse only one component of blended learning — for example, digital tools or social interaction, without considering their combined effect. In addition, some studies lack longitudinal designs, which makes it difficult to assess the sustainability of the observed improvements in critical thinking. These limitations highlight the need for more comprehensive experimental research that integrates multiple blended learning strategies, applies standardized CT assessment tools, and involves balanced samples of students. This study addresses these gaps by systematically evaluating the impact of blended learning on both skills and dispositions of critical thinking in foreign language learning.

Methodology

Research design

Research design included several stages. At the preparatory stage, the aim of the study was determined — to study how the blended learning affects the students' CT development when learning a foreign language. For this purpose, two groups of students studying English at the same educational institution were selected. The groups were formed so that their level of language proficiency was similar, which provided equivalent conditions for the study. At the main stage, the first group studied using the traditional method (offline lessons), and the second group studied using the blended format (a combination of online and offline classes). The tasks for developing CT were the same for both groups and included text analysis, discussions, and reflective exercises. However, the second group additionally had online components: interactive tests, debates on the Zoom platform, and the creation of multimedia projects. Various techniques and tasks were used that contributed to the active students' involvement in the learning process in order to develop CT in EG students.

The first important element of the experiment was interactive tests, which were used to test understanding of the material and develop analytical skills. These tests were organized on a platform where students completed tasks in real time, which facilitated instant feedback and the possibility of self-correction. Interactive tests were used every week, mainly at the end of a topic or unit, with a duration of 20 to 30 minutes. This element allowed not only to test knowledge, but also to stimulate deeper understanding of the material, analysis of answers, and formulation of arguments.

The second key task was the debates on the Zoom platform, which were held every two weeks. The topics selected for the debates were related to the material studied within the course and required students to formulate a clear position, provide arguments, and critically analyse other points of view. The students were required to prepare for debates, use scientific sources, analyse existing stereotypes or prejudices, and present their opinions in a clear, structured manner. This element of learning helped to develop the ability to critically evaluate arguments, adapt their point of view in the context of new data, and understand the complexity of the issue.

The final element was multimedia projects, which involved students creating presentations or videos based

on the studied topics. Multimedia tasks were designed to allow students to independently structure information, present it in an accessible and logical form, and demonstrate their ability to use presentation tools. These projects were completed at the end of each month, and their duration was about two weeks for preparation and discussion of the results in class. Thanks to these projects, students not only developed skills in working with various multimedia tools, but also improved their ability to critically analyse and synthesize information (Table 1).

Table 1.
The pedagogical experiment programme

Tasks	Form of learning	Frequency	Duration	Goal/objective
Interactive tests	Online (testing platform)	Weekly	20-30 minutes	Checking understanding of the material, developing analytical skills, stimulating self-correction.
Debates	Online (Zoom)	Once every two weeks	60-90 minutes	Developing the ability to formulate a position, argue one's point of view, critically evaluate arguments.
Multimedia projects	Online (presentation/video creation)	Once a month	2 weeks (preparation and discussion)	Developing skills in synthesizing and interpreting information, using multimedia tools.
Classroom discussions	Offline (live discussion)	After each main topic	30-40 minutes	Arranging knowledge, developing critical understanding of the material through group discussion.

Source: Developed by the authors

The completion of such tasks revealed that the EG received significant advantages in the CT development. Online tools, such as interactive tests and debates on the Zoom platform, allowed students not only to receive information, but also to actively interact with the material, test their hypotheses and argue their opinions. Multimedia projects contributed to the development of a comprehensive approach to the analysis and interpretation of information, which is an important element of critical thinking. Therefore, the EG demonstrated a higher level of development of critical skills compared to the CG, which confirmed the effectiveness of the blended learning format. Training in the CG was carried out only according to the traditional programme: lectures, seminars and written tests without online components.

The duration of the training was three months. At the data collection stage, both groups were tested to assess the initial level of CT. Re-testing was carried out after the three-month training to determine changes in the level of students' CT. The students' survey was also conducted to collect qualitative data, which allowed to obtain feedback on the impact of the selected training formats on the development of their CT skills. At the results processing stage, the results of the initial and final testing of both groups were compared using quantitative analysis through statistical methods. Students' responses to the survey questions were analysed to identify their subjective experience of blended and traditional learning.

Research methods

The study employed several methods that allowed for a comprehensive assessment of the impact of the blended learning on the development of students' CT. The main method was a pedagogical experiment. The experiment involved a comparison of two groups: a CG (which studied using traditional offline methods) and the EG (which was engaged in blended training). The blended learning combined elements of both offline and online learning. The experiment consisted of measuring the level of students' CT at the beginning and end of the study period, which allowed for the identification of changes associated with the use of different learning formats.

The level of CT development was assessed by using the Watson-Glaser Critical Thinking Appraisal (WGCTA) test, which contains tasks aimed at assessing interpretation, analysis, evaluation, drawing

Strategies for developing critical thinking through blended foreign language learning - Eduweb, 2025, julio-septiembre, v.19, n.3. / 315-327

319

conclusions, and self-regulation. The testing was conducted at the beginning and end of the study to obtain comparative data on changes in results between the initial and final stages of training. Besides, the California Critical Thinking Disposition Inventory (CCTDI) was used to assess students' dispositions to CT. This questionnaire consists of several subscales that assess various aspects of dispositions to CT, such as analytical thinking, openness to new experience, self-confidence, curiosity, systematicity, maturity in judgments, and orientation to truth. The questionnaire was conducted at the beginning and end of the study to determine changes in students' dispositions to CT under the influence of different learning formats.

All collected data were subjected to statistical analysis to determine the average indicators and compare the CG and EG results. Calculating the average scores for each indicator and calculating the difference between the initial and final results identified significant changes that indicate the effectiveness of the blended learning. Statistical analysis included a comparison of the average scores for each group to assess the difference in results between the groups and determine the effectiveness of the learning formats. So, the experimental method, questionnaire survey and testing were combined to comprehensively assess the impact of blended learning on the development of students' CT and dispositions to it.

Sample

The research sample included 40 students studying English at the Faculty of Ukrainian and Foreign Philology of Drohobych Ivan Franko State Pedagogical University. All participants were divided into two equal groups of 20 people. The sample was formed taking into account a similar level of language proficiency among students in order to minimize the impact of this parameter on the results of the study. Students studying English participated in the study, which ensured the specifics of the study. The total number of students was about 150 people.

The students were selected based on the following parameters:

1. The students were between 18 and 22 years old, which is typical for young people studying in bachelor's programmes.
2. All students had a medium level of English proficiency (B1-B2 according to the Common European Framework of Reference for Languages, CEFR), which is optimal for assessing changes in the CT development under the influence of different learning formats.
3. The sample included students with a similar level of knowledge to reduce the possible impact of initial differences in the preparation level on the results of the study.

The students were randomly selected from among those who were studying English and expressed a desire to participate in the study to ensure representativeness of the sample.

Equality of groups was achieved by random division into the CG and EG to minimize systematic errors and ensure objectivity of the comparison of results. This allowed to compare the CG (offline learning) and EG (blended learning) without significant differences in initial conditions.

Instruments

The instruments used in the research were educational materials aimed at CT developing (text analysis, reflective exercises), online platforms (Zoom for debates, interactive platforms for testing and multimedia projects), standardized tests to assess CT skills (the ability to ask clarifying questions, argue one's position, analyse alternative points of view), and questionnaires to collect qualitative data.

Results and Discussion

The results of the study are organized to show both quantitative and qualitative evidence of the effectiveness of blended learning in developing students' critical thinking. The analysis begins with the

outcomes of the WGCTA and CCTDI tests, which demonstrate measurable progress in critical thinking skills and dispositions. This is followed by students' qualitative feedback that illustrates their perceptions of blended learning. Finally, these findings are interpreted in the light of recent studies, allowing similarities and differences with previous research to be identified and discussed.

The WGCTA test was used to assess the CT level. Testing was conducted at the beginning and end of the training period.

Table 2 shows the results of testing in the CG.

Table 2.
Average scores in the CG (offline training)

Indicator	Initial testing	Final testing	Difference
Interpretation	65	68	+3
Analysis	60	62	+2
Evaluation	58	61	+3
Conclusions	62	65	+3
Self-regulation	64	66	+2
Overall average score	*61.8*	*64.4*	*+2.6*

Source: Developed by the authors

The average scores according to the test results in the EG are shown in Table 3.

Table 3.
Average scores according to the test results in the EG (online learning)

Indicator	Initial testing	Final testing	Difference
Interpretation	66	73	+7
Analysis	62	70	+8
Evaluation	59	68	+9
Conclusions	623	71	+8
Self-regulation	65	72	+7
Overall average score	*63.0*	*70.8*	*+7.8*

Source: Developed by the authors

Interpretation of the results. The CG showed a slight increase in all CT indicators, the overall average increase was +2.6 points.

Experimental group: the results indicate a significant improvement in all aspects of CT. The overall average increase reached +7.8 points.

The increase in the CT level at the beginning and end of the experiment in both groups is clearly presented in Figure 1.
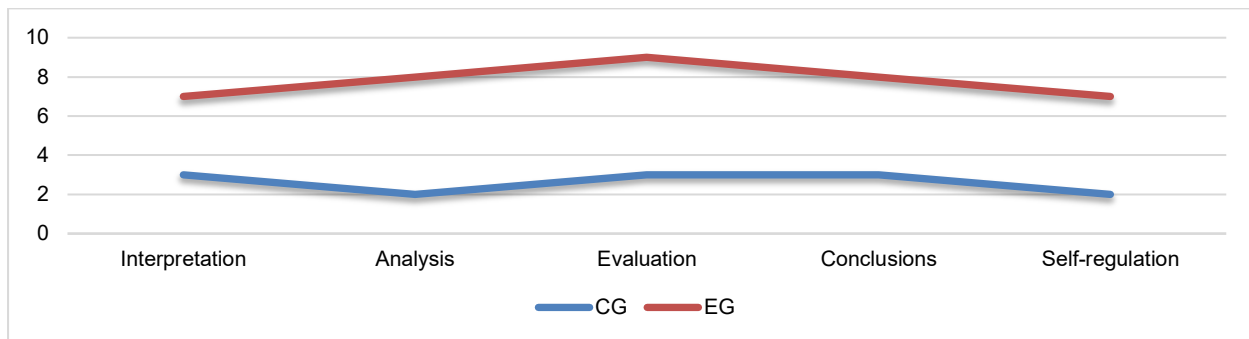
Strategies for developing critical thinking through blended foreign language learning - Eduweb, 2025, julio-septiembre, v.19, n.3. / 315-327

321

Figure 1. Increase in the CT level at the end of the experiment in the CG and EG
Source: Developed by the authors

As we can see, the CT level in the EG increased significantly compared to the CG, which confirms the effectiveness of the blended learning. The greatest improvement in the EG was observed in the Evaluation category (+9 points), which indicates the development of students' ability to analyse arguments and draw conclusions based on evidence.

The CCTDI questionnaire was used to assess dispositions to CT. Testing was conducted at the beginning and end of the training period.

The CCTDI consists of several subscales that assess dispositions to CT: analytical, openness to new experience, self-confidence, curiosity, systematicity, maturity in judgments, and orientation to truth. The maximum possible score is 420 (60 points for each subscale). The results for the CCTDI in the CG and EG are shown in Tables 4 and 5.

Table 4.
Mean scores for the CCTDI in the CG

Subscale	Initial testing	Final testing	Difference
Analytical skills	45	47	+2
Openness to new things	42	44	+2
Self-confidence	40	42	+2
Curiosity	43	45	+2
Systematicity	41	43	+2
Maturity in judgments	39	40	+1
Orientation towards truth	44	45	+1
Overall score	*294*	*306*	*+12*

Source: Developed by the authors

Table 5.
Average CCTDI scores in the EG

Subscale	Initial testing	Final testing	Difference
Analytical skills	44	51	+7
Openness to new things	43	50	+7
Self-confidence	41	48	+7
Curiosity	45	52	+7
Systematicity	42	50	+8
Maturity in judgments	40	47	+7
Orientation towards truth	43	49	+6
Overall score	*298*	*347*	*+49*

Source: Developed by the authors

Interpretation of the results. The CG's results indicate a slight improvement in dispositions to CT (+12 points). The greatest increase is observed in analytical skills and openness to new things (+2 points each). Figure 2 provides a characteristic of the increase in dispositions to critical thinking in both groups at the end of the experiment.
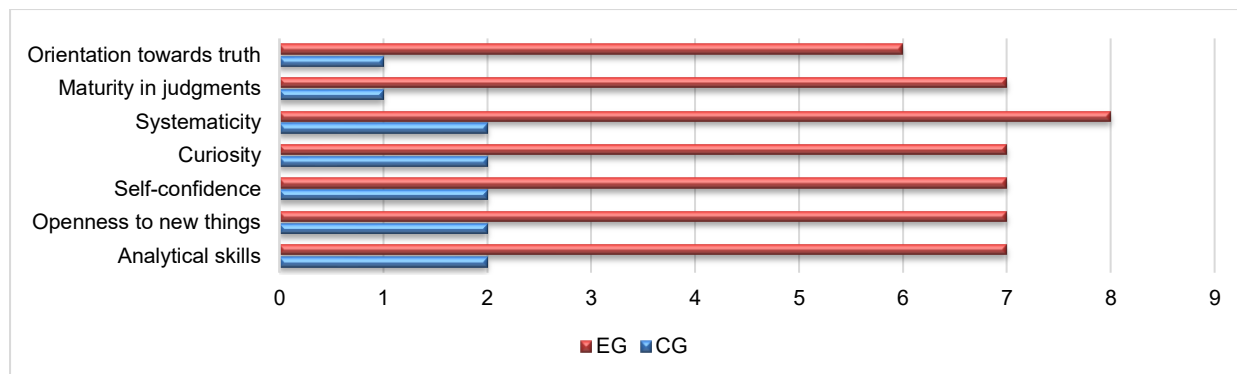

Figure 2. Characteristics of the increase in dispositions to CT in the CG and EG
Source: Developed by the authors

Figure 2 shows that the EG showed a significant increase in indicators in all subscales (+49 points in total). The greatest increase was noted in systematicity (+8 points) and analytical skills (+7 points).

Figure 3 provides a comparative characteristic between the CG and EG on various CT indicators.
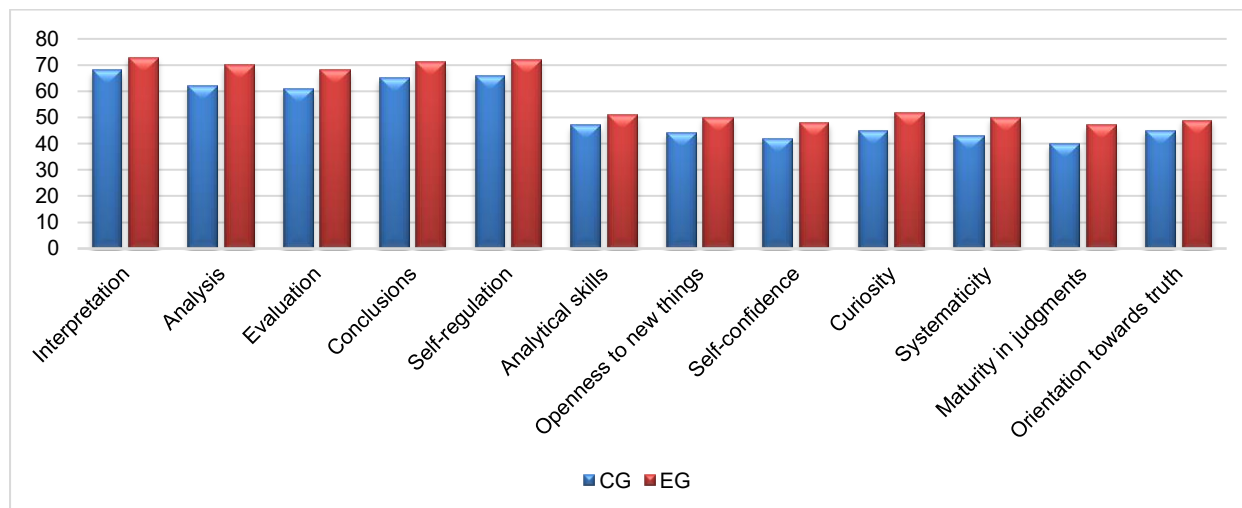

Figure 3. Comparative characteristics between the CG and EG on various indicators of critical thinking
Source: Developed by the authors

So, the increase in the EG significantly exceeds the results of the CG, which demonstrates the effectiveness of the blended learning in forming dispositions for CT.

The results of the study confirm that the blended learning significantly contributes to the development of critical thinking. Interactive methods implemented in blended learning stimulate the development of such dispositions as systematicity, analytical skills, and curiosity. This indicates the appropriateness of using blended learning to improve students' cognitive skills.

Taken together, the quantitative results of both the WGCTA and the CCTDI demonstrate that students in

Strategies for developing critical thinking through blended foreign language learning - Eduweb, 2025, julio-septiembre, v.19, n.3. / 315-327

323

the experimental group made substantially greater progress in critical thinking skills and dispositions than those in the control group. These findings not only highlight the measurable advantages of blended learning but also raise questions about which specific components of the blended format contributed most to the improvement. To answer this, it is essential to interpret the data in light of students' qualitative feedback and to position the results within the context of previous studies.

The findings of the present study confirm that blended learning significantly contributes to the development of critical thinking, with notable improvements in evaluation, systematicity, and analytical skills. These outcomes resonate with the results reported by De la Puente Pacheco et al. (2024), who demonstrated that online and blended teaching methods in Latin American universities foster cross-curricular skills, including communicative and analytical competences. Their evidence that digital platforms increase flexibility and provide continuous opportunities for practice in language learning aligns with our own data, where students in the experimental group achieved substantially greater gains than those in the control group. This convergence suggests that the effectiveness of blended learning is not limited to a single educational context but reflects a broader trend confirmed across different regions. Further comparative research over the past five years provides an important basis for deepening the analysis and identifying which specific components of blended learning drive the most significant improvements in students' critical thinking.

First, the results of our study are consistent with the findings of Ivancu et al. (2023), who noted that blended learning contributes to an increase in students' analytical skills and the ability to classify information. In our experiment, the EG students demonstrated an increase in these skills by +7 points, which confirms the effectiveness of integrating online components into traditional learning.

Second, Jaswal & Behera (2023) argue that social interaction in small groups in a blended learning stimulates the CT development. Our results demonstrate a similar effect, as the EG students actively participated in discussions in Zoom, which contributed to improving assessment skills (+9 points). However, our results differ in some respects. For example, Indah et al. (2024) found that senior students demonstrate lower CT levels compared to younger students. Our study did not find such differences, which may be explained by other cultural or methodological factors.

The study by Teng & Zeng (2022) confirms that integrating CT strategies into English language courses significantly improves analytical and reflective skills. We also observed a positive impact of text analysis tasks and reflective exercises, contributing to overall increases in these categories.

Yang et al. (2022) emphasize the benefits of combining mobile learning, active learning, and blended learning. In our study, mobile technology was used less extensively, but the integration of such tools could further enhance learning effectiveness.

The study of Mohebbi et al. (2023) points to the importance of developing teachers' pedagogical skills for effective implementation of blended learning. We support this conclusion, as preparing teachers to work with digital platforms was a key element of our experiment. Lu (2021) emphasizes the importance of pedagogical design in blended learning. Our results support this approach: clear formulation of objectives and lesson structure contributed to increased CT scores.

Lu (2021) states the importance of pedagogical design in blended learning. Our results support this approach: clear formulation of objectives and lesson structure contributed to increased critical thinking scores.

Hasanah and Malik's (2020) study shows that integrating multimedia projects into blended learning is an effective strategy for developing cognitive skills. In our study, such projects were used to a limited extent, which may be a direction for further research.

Recommendations

Teachers should strengthen the integration of mobile technologies into the educational process, ensuring students' access to educational materials at any time and place. It is recommended to expand the practice of multimedia projects in blended learning, which will contribute to the development of not only cognitive skills, but also creativity and teamwork of students; ensure regular and high-quality feedback between teachers and students, which will enable timely adjustment of the educational process according to the students' needs.

Conclusions

The study confirmed the effectiveness of blended learning in developing students' critical thinking skills in foreign language learning. The use of interactive online tools such as Zoom and Google Classroom, combined with traditional teaching methods, contributed to the improvement of students' cognitive skills, especially in the categories of analysis, evaluation, and reflection. The results showed a significant increase in CT scores in the EG (+7.8 points) compared to the CG (+2.6 points).

The academic novelty of the study is the identified specific impact of blended learning on the CT development in students when studying foreign languages. In particular, it was found that the integration of reflective tasks and multimedia projects into the educational process stimulates the development of analytical skills, systematicity, and openness to new experience. The role of feedback in the formation of students' positive attitude towards blended learning was also studied for the first time.

The practical value of the study is the provided recommendations for teachers on the implementation of blended learning that take into account the students' individual needs and ensure the integration of modern digital technologies. The results can be used to develop curricula that contribute not only to the assimilation of language material, but also to the development of students' cognitive and social skills.

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Strategies for developing critical thinking through blended foreign language learning - Eduweb, 2025, julio-septiembre, v.19, n.3. / 315-327

325

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Strategies for developing critical thinking through blended foreign language learning - Eduweb, 2025, julio-septiembre, v.19, n.3. / 315-327

327