

Integrating Digital Citizenship into Language Education: Enhancing Critical Digital Literacy in an Intercultural Context

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ABSTRACT:

The purpose of the study is to empirically verify the effectiveness of integrating digital citizenship into the language education process in terms of increasing the level of critical digital literacy of education seekers in the context of intercultural communication, as well as identifying pedagogical conditions that ensure its effectiveness. The study was conducted in 2025 at a higher education institution in Ukraine with the involvement of 32 students aged 18–22 in the format of pilot testing of the integration model. Within a ten-week training cycle, a system of modules was introduced that combined speech activity with digital content analysis, intercultural interaction and the formation of ethical norms of online communication. The assessment was carried out before and after the model implementation according to the criteria of critical analysis of information, recognition of disinformation, quality of argumentation and adherence to ethical norms. The results showed positive dynamics. The proportion of students with a high level of digital content increased, the volume of written responses rose from approximately 70–90 to 150–180 words, and the number of reasoned statements in discussions increased twice. The level of compliance with ethical norms of online interaction increased by approximately 20–25 percent. Statistical testing confirmed differences between the initial and final indicators at a significance level of less than 0.05. The results indicate the potential of integrating digital citizenship into

language education as a means of developing critical digital literacy and improving the quality of intercultural communication.

Keywords: intercultural communication, foreign language education, English, critical information evaluation, digital communication ethics

1. Introduction

The rapid digitalization of the educational environment is accompanied by an increase in the volume of information, the intensification of intercultural communication and the spread of manipulative content, which significantly complicates the process of forming the ability of students to critically understand digital resources. Despite the active introduction of digital technologies into language education, their use is mostly limited to the instrumental level and does not ensure the development of critical digital literacy as a component of digital citizenship. At the same time, the intercultural context of learning, which involves interaction with various information and cultural environments, requires the integration of cognitive, communicative and ethical competencies, which is currently being implemented fragmentarily. As a result, a contradiction arises between the need to form a holistic model of digital citizenship in language education and the lack of a systematic approach to combining critical digital literacy with intercultural communicative training, which determines the relevance of this study.

In modern scientific discourse, the digitalization of education is increasingly viewed not only as a technological process, but as a profound transformation of the content and goals of learning. In this context, there is a need to understand new educational categories that can integrate technical, social and ethical aspects of interaction in the digital environment. Webster (2025) argues that digital citizenship should be interpreted as a multidimensional construct that encompasses responsible behavior, critical participation in digital communities and conscious use of information resources. At the same time, the researcher emphasizes the lack of conceptual unity in defining this phenomenon,

which causes methodological difficulties in implementing relevant educational practices.

In parallel with the development of the concept of digital citizenship, attention is increasing to the problem of critical digital literacy as a key competence of a modern education seeker. In scientific approaches, there is a shift in emphasis from technical skills to cognitive and reflective processes related to the analysis and interpretation of digital content. Harrison (2025) argues that critical digital literacy should be considered as the ability not only to consume information, but also to assess its reliability, context and potential impact. At the same time, the diversity of approaches to its definition and teaching indicates the absence of a unified pedagogical model, which limits the effectiveness of its integration into the educational process.

In the field of foreign language education, digital competences are increasingly seen as an important tool for improving the quality of learning and developing communication skills. In view of this, there is a need to combine language training with the formation of a critical attitude towards information. Armanda and Yosintha (2022) argue that the integration of elements of critical digital literacy into the process of learning a foreign language contributes to the development of analytical thinking and a deeper understanding of the educational material. However, these studies mostly focus on the applied level and do not cover the broader conceptual dimension of digital citizenship, which indicates a gap between theoretical and practical approaches.

In the context of globalization and digital communication, the intercultural aspect of language education is of particular importance, requiring the integration of new competencies. In the digital environment, interaction between

representatives of different cultures is more intense and complex, which necessitates the formation of the ability to critically understand cultural differences and information contexts. Dooley and Darvin (2022) emphasize that the combination of intercultural communicative competence with critical digital literacy creates the prerequisites for the formation of a new pedagogical paradigm focused on research and problem-based learning. At the same time, the issue of the systematic integration of these components into language education remains underdeveloped.

The general picture of modern research indicates a growing interest in the problems of digital literacy and digital citizenship, but their study is often fragmentary. Attempts to systematize this scientific field demonstrate the unevenness of the study of individual domains and the lack of a holistic approach to their interaction. Caton, Kinshuk and Savenye (2025) in a systematic review indicate that digital literacy is presented as a set of interconnected, but not always integrated components, which complicates its practical application in educational environments. Thus, the existing scientific base creates the prerequisites for further research aimed at integrating digital citizenship, critical digital literacy and an intercultural approach within language education.

Despite the intensive development of research in the field of digital education, a number of key aspects remain insufficiently developed. First of all, there is no agreed conceptual model that would systematically integrate digital citizenship, critical digital literacy and intercultural communicative competence within language education; existing approaches operate in parallel and do not form a holistic pedagogical construct. The second problem is the limited operationalization of these concepts: there are no clear indicators, valid measurement tools and standardized criteria for assessing learning outcomes, which complicates the empirical verification of the effectiveness of educational practices. The third “blank spot” is related to the methodological level: there is a lack of proven didactic models that would combine the

development of language skills with the formation of a critical analysis of digital content in an intercultural environment. In addition, existing research is mainly local or instrumental in nature and does not provide a comparative analysis of different educational contexts, which limits the possibility of generalizing the results. Finally, the relationship between the cognitive, ethical, and communicative components of digital interaction has not been sufficiently explored, which does not allow us to form a holistic view of the mechanisms for the development of critical digital literacy in the context of intercultural communication.

The purpose of the study is to empirically verify the effectiveness of integrating digital citizenship into the language education process in terms of increasing the level of critical digital literacy of education seekers in the context of intercultural communication, as well as identifying pedagogical conditions that ensure its effectiveness.

To achieve the goal, the study involves a comprehensive solution to interrelated tasks that combine theoretical analysis and empirical verification. First of all, it is necessary to clarify the content of digital citizenship and critical digital literacy in the context of language education, identifying their structural components and relationships with intercultural communicative competence. In parallel, the logic of integrating these components into the educational process is substantiated through the development of an educational module or a system of educational tasks focused on the formation of the ability to critically analyze digital content in a foreign language environment.

The next step involves organizing a pedagogical experiment with the determination of sampling parameters, criteria and indicators for assessing the level of critical digital literacy, as well as conducting measurements before and after the implementation of the integration approach. The results obtained are subject to statistical analysis in order to establish the significance of changes and identify the influence of the intercultural component on the formation of the studied

competence. The final stage is to generalize the results of the experiment and formulate practical recommendations for the effective integration of digital citizenship into the process of teaching foreign languages.

2. Literature Review

In the current scientific literature, there are several different approaches to the interpretation of digital citizenship, which are not always consistent with each other. Some researchers consider it as an integrated educational construct that combines digital skills, ethical behavior and social responsibility, emphasizing the need for systematic implementation in the educational process (Ahmed & Mahmud, 2025; Apata et al., 2025). At the same time, other approaches focus on a narrower interpretation, in which digital citizenship is reduced to a set of functional competencies or behavioral norms in the digital environment, which limits its pedagogical potential and complicates its integration into language education (Gökoğlu & Özhan, 2025). Such divergence indicates the absence of a single conceptual core, which complicates the development of coherent educational models.

A similar heterogeneity is characteristic of research on digital literacy. On the one hand, modern generalizations emphasize it as a cognitively oriented ability to critically analyze and interpret information, which forms the basis of conscious digital behavior (Hauck, 2025). On the other hand, empirical studies demonstrate that in educational practice it is often reduced to the development of applied skills, in particular, working with digital resources and online tools, without due attention to the critical component (Hudson, 2024; Japar et al., 2024). Bibliometric studies confirm this trend, indicating the fragmentation of the scientific field and the lack of integration between individual domains of digital literacy (He & Li, 2025). Thus, a gap arises between theoretical models and their practical implementation.

In the context of language education, digital technologies are primarily seen as a means of

expanding communicative opportunities, as evidenced by research on virtual exchanges and online interactions. Researchers show that digital environments contribute to the development of language skills, intercultural sensitivity and communicative competence (O'Dowd, 2021; Çimenli and al., 2022; Satar & Çimenli, 2025). At the same time, these approaches do not always integrate the digital citizenship component, focusing mainly on the communicative aspect. Another group of studies, on the contrary, tries to combine language education with the formation of digital citizenship, emphasizing the intercultural dimension and the development of critical thinking (Simões & Brás, 2025). However, such approaches remain limited to individual educational practices and do not form a universal methodological model.

An additional dimension of the problem is related to pedagogical innovations and the use of digital tools in teaching. In particular, the use of blended learning and digital games is seen as an effective way to develop digital citizenship and engage learners in active interaction (Erol, 2025; Panjaburee et al., 2025). However, these approaches are mainly focused on increasing motivation and engagement, while their impact on the formation of critical digital literacy and intercultural competence remains insufficiently studied. In addition, the experience of the COVID-19 pandemic has shown that even in conditions of intensive use of digital technologies, the development of digital competences occurs unevenly and depends on external factors, in particular access to resources and the level of training of users (Neubaum et al., 2025).

Language education is largely determined by teacher training. Research shows that modern educational programs do not provide a sufficient level of formation of relevant competencies among teachers, which limits the possibilities of implementing innovative approaches (Simões et al., 2024). As a result, a situation arises where even the presence of theoretical models and technological tools does not guarantee their effective use in the educational process.

Thus, the analysis of modern literature allows us to highlight several key contradictions: between a broad theoretical understanding of digital citizenship and its narrow practical implementation; between the conceptualization of critical digital literacy and its instrumentalization in educational practice; between the development of intercultural communication and the lack of its integration with digital competencies. The combination of these contradictions indicates the need to develop a holistic model that would combine the above components within language education.

3. Materials and Methods

The study was implemented in 2025 based in Lviv Polytechnic National University, where students are trained in English language programs. As part of the study, a pedagogical model for integrating digital citizenship into the language education system was developed and tested to form critical digital literacy in intercultural communication. The empirical part was a case study and was used to test the developed model, not to generalize the results. The sample is pilot in nature and is used for the initial verification of the model's performance. The study involved 32 students aged 18–22 (19 women, 13 men), who were studying in their 2nd–3rd year. The inclusion criteria were regular participation in classes, access to a digital learning environment, and basic skills in working with online resources. Students with irregular attendance or limited access to digital platforms were not included in the sample.

The learning process was carried out in a mixed format using the LMS *Moodle* and synchronous classes in *Zoom*, which provided a combination of asynchronous and interactive intercultural communication. The developed model of integrating digital citizenship into language education has a structural and functional nature and includes three interrelated blocks: cognitive, communicative and ethical. The cognitive block is aimed at developing the ability to critically analyze digital content, including assessing the reliability of sources and identifying disinformation content. The communicative

block is focused on developing foreign language interaction skills in a digital environment in the context of intercultural communication. The ethical block involves mastering the norms of responsible online behavior and the principles of digital citizenship.

The model was integrated into the foreign language course as a supplementary component, partially replacing traditional tasks at levels B1–B2. Its implementation was associated with achieving such educational outcomes as the development of critical thinking, improving the quality of intercultural communication, and forming a responsible attitude towards digital content.

The model was tested for 10 weeks and was integrated into regular classes (2 classes per week, 90 minutes each). Each training week included 2–3 tasks aimed at combining speech activity and digital analytics, taking into account the intercultural context. The format of the classes was modified by including interactive digital components. In particular, tasks were used to analyze disinformation content in a foreign language with a reasoned justification of its unreliability, participate in intercultural online discussions, and assess the reliability of digital sources with subsequent presentation of the results.

Each type of activity was aimed at achieving specific pedagogical goals: the development of analytical thinking, the formation of communicative competence and the assimilation of ethical norms of digital interaction. The study used the integration model as the main pedagogical tool and a system for evaluating the results of its implementation. The effectiveness was assessed according to the following criteria: the level of integration of the digital component into the educational process, the activity of students in completing tasks, the quality of critical analysis of digital content, the level of argumentation and adherence to ethical norms in intercultural communication.

The assessment was carried out by the teacher using standardized descriptors developed for each level. Additionally, the level of critical digital

literacy was determined on a three-level scale (low, medium, high). The assessment was carried out twice: before the start of integration and after the completion of the 10-week cycle. The normality of the distribution was previously checked using the Shapiro - Wilk test. The Wilcoxon T-test for related samples was used to assess changes. The level of statistical significance was set at $p < 0.05$. Statistical analysis was of an auxiliary nature and was used to identify trends in changes. Data processing was carried out using SPSS and Microsoft Excel software. The educational process and data collection were implemented through the LMS *Moodle* and the *Zoom* platform.

4. Results

Features of implementing the model into the educational process

Implementing a digital citizenship integration model into an English language course based in Lviv Polytechnic National University was implemented as a systemic restructuring of the educational process, within which digital competencies were integrated into speech activity without isolating a separate educational block. The practical implementation was carried out over ten weeks and included twenty classes lasting 90 minutes each, which allowed us to trace not only the fact of implementation, but also the dynamics of students' adaptation to the new learning logic.

At the initial stage (week 1–2), the dominance of the reproductive type of activity was recorded: students performed tasks on identifying sources of information and determining their reliability, but their answers remained superficial and were limited to formal signs of reliability. Already at weeks 3–5, there was a noticeable complication of cognitive operations: students began to take into account the context, linguistic markers of manipulation and stylistic features of digital discourse. By the final stage (week 8–10), most participants demonstrated the ability to comprehensively analyze digital content, including a reasoned assessment of information

in a foreign language of 120–180 words or oral presentations lasting up to 3 minutes.

The changes affected not only the cognitive aspect, but also the structure of the lessons. The share of traditional exercises (reading with comprehension control, lexical substitutions) was reduced from approximately 70% to 40% of the teaching time, while interactive tasks with a digital component increased to 60%. This allowed transforming the learning process towards an analytical and communicative orientation, which is consistent with the OECD approaches (2023), where the effectiveness of digital education is associated with the integration of competencies into the content of the activity, rather than their isolated study.

The communicative dimension of the model implementation was manifested in a change in the quality of speech interaction. If at the initial stage the average number of reasoned remarks in discussions did not exceed 1–2 per student per lesson, then at the final stage this figure increased to 4–5, and the statements acquired a clearer structure and logical completeness. Participation in intercultural online discussions in *Zoom* contributed to the formation of the ability to interpret cultural differences, which confirms the results of Lee et al. (2023) on the effectiveness of integrating intercultural communication in an online environment.

The ethical component of the implementation was manifested in a change in students' behavioral strategies. The number of cases of using incorrect or categorical formulations in written and oral responses decreased by approximately a third, while the proportion of reasoned and neutral statements increased. This indicates the formation of a conscious attitude towards digital communication and is consistent with the approaches of UNESCO (2024), where digital literacy is considered as a combination of cognitive and ethical competencies.

To systematize the changes recorded during the model implementation process, the summarized results are presented in a table.

Table 1. Dynamics of changes in the educational process during the implementation of the digital citizenship integration model

Indicator	Initial stage	Final stage
The share of analytical tasks in the lesson structure	≈30%	≈60%
Average number of reasoned statements per student	1–2	4–5
Level of critical analysis of digital content	mostly average	dominance of high
Quality of intercultural communication	fragmentary	structured and reasoned
Adherence to ethical norms of online interaction	unstable	stable

Source: developed by the author based on the results of his own research; indicators were formed taking into account approaches to digital education and digital skills development (OECD, 2023; UNESCO, 2024)

The obtained data indicate that the integration of digital citizenship into language education changes not only the content of educational tasks, but also the very nature of educational interaction. The educational process acquires an applied nature, focused on analysis and communication, which corresponds to the current trends in the development of digital skills, recorded in the statistical surveys of Eurostat (2024a). Thus, the implemented model demonstrates the ability to effectively integrate into the language education system and creates conditions for the comprehensive development of critical digital literacy.

Structural characteristics of training modules and their implementation

The implementation of the integration model was carried out through a consistent system of training modules, built on the principle of combining speech activity and digital analytics, taking into account the intercultural context. The design of the modules did not duplicate traditional course topics, but superimposed on them, transforming typical tasks into more complex cognitive and communicative actions. Within the ten-week cycle, three interconnected modules were implemented, each of which corresponded to a separate component of the model and at the same time gradually complicated the previous one.

The first module, focused on the cognitive component, covered the first three weeks of

training and was aimed at developing skills in analyzing digital content. At this stage, short authentic texts (150–250 words) were used that contained signs of disinformation: manipulative headlines, lack of a clearly identified source, emotionally colored vocabulary. Students performed tasks that involved not only understanding the content, but also assessing its reliability according to specific parameters. In the process of analysis, they consistently identified the source of information, checked the factual basis of the message, and identified linguistic markers of influence. At the initial stage, students' responses were limited to short formulations (2–3 sentences), but already in the second week, an increase in the volume of argumentation to 80–100 words was observed, which indicated a gradual complication of cognitive activity. This structure of tasks correlates with the approaches presented in Vuorikari et al. (2022), where digital competence is viewed as a step-by-step process of moving from identifying information to its critical interpretation.

The second module, which implemented the communicative component, lasted from the fourth to the seventh week and was aimed at integrating critical analysis into the process of foreign language interaction. The tasks of this stage involved students' participation in structured online discussions that simulated intercultural communicative situations. The topics of the discussions covered issues of digital ethics, cultural differences in the perception of

information, and the features of online communication in different countries. If in the initial classes, students were limited to short reactive remarks, then by the end of the module their statements became more reasoned and structured, including a clear formulation of the position, giving examples and counterarguments. The average volume of oral responses increased from approximately 30–40 seconds to 1.5–2 minutes, and written responses to 150–180 words. This indicates a transition from formal use of language to its functional application in digital discourse, which is consistent with the results of Lee et al. (2023), which emphasizes the role of intercultural interaction in the development of communicative competence.

The third module, focused on the ethical component, covered the last three weeks of training and was aimed at forming responsible models of behavior in the digital environment. Within this stage, students worked with cases that reflected typical situations of online interaction, in particular, conflict discussions, the spread of unverified information, or incorrect use of sources. The tasks required not only an analysis of the situation, but also the development of alternative behavioral strategies that met the norms of digital citizenship. In the process of

completing such tasks, a decrease in the number of impulsive and categorical statements by approximately 25–30% was recorded, while the share of reasoned and neutral formulations increased. This indicates the formation of a conscious approach to digital communication and is in line with the provisions of UNESCO (2024), where the digital transformation of education is considered as a process of developing responsible participation in the information environment.

An important characteristic of the implementation of the modules was their integration into the structure of classes without violating the logic of language learning. Instead of the traditional division into reading, speaking and writing, each type of activity was combined with a digital component. For example, reading tasks included analysis of the reliability of sources, speaking tasks - participation in discussions, and written works involved an argumentative evaluation of information. This ensured the integrity of the learning process and avoided fragmentation of competencies.

The generalized characteristics of the training modules and their functional parameters are presented in the table.

Table 2. Structural characteristics of training modules and results of their implementation

Module	Duration	Main function	Types of activities	Result
Cognitive	1–3 weeks	Digital content analysis	Source identification, manipulation detection	Growth of analytical skills
Communicative	Week 4–7	Foreign language interaction	Online discussions, argumentation	Improving the quality of communication
Ethical	8–10 weeks	Digital behavior	Case analysis, solution modeling	Shaping responsible interaction

Source: developed by the author based on the results of his own research; the structure of the modules is formed taking into account approaches to digital citizenship and intercultural language education (Simões & Brás, 2025; Vuorikari et al., 2022)

The results obtained demonstrate that the structured implementation of training modules ensures a gradual transition from cognitive assimilation of information to its communicative

and ethical application. Such logic allows us to consider digital literacy not as an isolated skill, but as an integrated component of language education, which is formed through the

systematic organization of the educational process.

Dynamics of critical digital literacy indicators

The assessment of changes in the level of critical digital literacy was carried out twice: before the start of the model integration and after the completion of the 10-week cycle of its implementation. The measurement was carried out according to four criteria defined in the methodology: the ability to critically analyze digital content, the level of recognition of disinformation content, the quality of argumentation in a foreign language environment, and compliance with ethical norms of online communication. The results obtained allowed us to record not only quantitative changes, but also the transformation of the nature of the implementation of educational tasks.

At the initial stage of the study, the majority of students demonstrated an average level of critical digital literacy. Analysis of digital content was carried out mainly at the level of identifying obvious signs of unreliability, while deeper aspects – checking sources, comparing information and interpreting linguistic strategies of influence – were used episodically. After the completion of the testing, an increase in the proportion of students demonstrating a high level according to this criterion was recorded; this was accompanied by a transition from fragmentary responses to structured statements with a clear distinction between facts and judgments.

Similar dynamics were observed in the indicators of disinformation content recognition. While at

the initial stage students focused mainly on superficial markers, after completing the training cycle they more often took into account a complex of factors, including checking sources and logical coherence of the message. This change was accompanied by a transition from an intuitive to a more analytical approach to evaluating information, which is consistent with Georgopoulou's et al. (2025) results, which emphasizes the gradual nature of the development of digital analytical skills in students.

Changes in the quality of argumentation were manifested in an increase in the volume and logical integrity of the responses. At the initial stage, most of the statements were fragmentary and consisted of short statements without detailed justification. After the implementation of the model, the formation of structured arguments was observed, which included a thesis, explanations and examples. The volume of written responses increased approximately from 70–90 to 150–180 words according to the results of the assessment using descriptors, which reflects a deepening of the content of speech activity.

In the area of compliance with ethical norms of digital communication, a stable, albeit less intense, positive dynamics was recorded. At the initial stage, cases of the use of categorical or incorrect formulations were observed, while after the completion of the study, the responses became more balanced and neutral. The share of statements that corresponded to the established ethical descriptors increased by approximately 20–25%, which indicates the gradual formation of a responsible model of digital interaction.

The summarized results of the dynamics of indicators are presented in the table.

Table 3. Dynamics of the level of critical digital literacy of students (n=32) before and after the implementation of the model

Criterion	Beginner level (dominant)	Final level (dominant)
Digital content analysis	average	high
Recognizing disinformation	average	high
Quality of argumentation	low–medium	medium–high

Ethical online communication	average	high
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Source: developed by the author based on the results of his own research; the interpretation of the criteria is consistent with the approaches of Vuorikari et al. (2022)

Preliminary verification of the normality of the distribution of indicators using the Shapiro - Wilk test did not confirm their compliance with the normal distribution, which justified the use of non-parametric analysis methods. According to the results of using the Wilcoxon T-test for related samples, statistically significant differences were found between the initial and final values for all criteria ($p < 0.05$), which indicates the presence of positive dynamics of changes in the level of critical digital literacy.

The results obtained reflect a gradual transformation of educational activity: from predominantly reproductive processing of information to its critical understanding and reasoned use in a foreign language environment. At the same time, given the pilot nature of the sample, these changes should be considered indicative, reflecting the potential of the proposed integration model.

Analysis of changes in indicators during the model testing process

The analysis of changes in indicators during the model testing process was carried out based on a comparison of the results of the initial and final measurements, as well as a qualitative analysis of students' educational activities throughout the entire implementation cycle. It was noted that the dynamics of changes were uneven and manifested differently depending on the component of critical digital literacy.

In the middle of the learning cycle, according to observations in the learning process, the completion of tasks was accompanied by an increase in the level of students' involvement in communicative activity. This was manifested in the form of an increase in the number of initiated statements, longer answers and more active participation in discussions in the digital environment. If at the initial stage the answers were often limited to short reactive remarks, then

later they were accompanied by the use of arguments, examples and explanations.

Changes in the ability to critically analyze digital content were manifested in the transition from fragmentary identification of individual signs of unreliability to a comprehensive analysis of information. At the final stage, the tasks were accompanied by the inclusion of such elements as checking sources, comparing information with alternative materials, and assessing the logical coherence of the message. Students' responses became more structured, which was manifested in a clear distinction between facts and judgments and a consistent statement of the position.

In the area of argumentation, changes were recorded, manifested in the formation of more complex logical constructions. At the initial stage, statements were often descriptive in nature, while after the completion of the testing they were accompanied by the use of cause-and-effect relationships and examples. The volume of written responses increased approximately according to the results of the descriptor assessment, which reflects the increase in the content of speech activity.

Indicators of disinformation content recognition demonstrated faster adaptation of students to the new requirements of the educational process. This was manifested in the form of more frequent use of strategies for checking sources and detecting manipulative elements. At the final stage, the analysis was accompanied by consideration of a wider range of factors, which indicates an expansion of the cognitive approach to evaluating information.

The ethical component was characterized by gradual changes, manifested in the form of a decrease in the number of categorical or incorrect formulations in the answers. The communicative behavior of students was accompanied by a more balanced selection of language means, the use of

neutral constructions and taking into account the position of the interlocutor. These changes were not sharp, but were stable throughout the entire cycle of training.

During the analysis, three types of dynamics of changes in indicators were identified: changes accompanied by rapid adaptation (recognition of disinformation content), changes that unfolded gradually (cognitive analysis and argumentation), and changes with stable dynamics (ethical behavior in the digital environment).

Statistical analysis confirmed the presence of differences between the initial and final indicators. Preliminary verification of the normality of the distribution using the Shapiro - Wilk test did not confirm compliance with the normal distribution, which justified the use of a non-parametric approach. According to the results of applying the Wilcoxon T-test for related samples, statistically significant changes were recorded for all criteria ($p < 0.05$), while the changes were accompanied by an increase in the level of indicators towards higher values.

The results obtained reflect the nature of changes within the studied group and demonstrate positive dynamics of critical digital literacy indicators in the process of testing the model of integrating digital citizenship into language education.

5. Discussion

The obtained research results allow us to clarify the role of integrating digital citizenship into language education as a tool for transforming the educational process, and not just as an additional content element. The recorded changes in the structure of educational activity, in particular the transition from reproductive task performance to analytical and communicative interaction, were accompanied by the formation of more complex cognitive and behavioral patterns. This is important because it confirms that digital literacy in language learning is manifested not as an isolated skill, but as an integrated characteristic of educational activity.

The results obtained are consistent with approaches to understanding digital citizenship as a practice of everyday interaction with the information environment. In particular, Smit et al. (2025) emphasize that digital citizenship is formed in the process of real user experience and often comes into conflict with formalized educational policies. Within the framework of the conducted study, such a contradiction is partially leveled due to the fact that the educational tasks recreate real situations of digital communication. This is manifested in the inclusion of disinformation content, modeling of intercultural discussions and the need for reasoned evaluation of information in a foreign language.

At the same time, the recorded increase in the level of student engagement and the complexity of their educational activities correlates with the conclusions of Suárez-Perdomo et al. (2022), who note that students' digital practices are associated with their academic behavior, in particular the ability to self-regulate and productively use time. In the study, this was manifested in the form of more systematic completion of tasks, an increase in the volume of responses and a transition to a more structured presentation of thoughts. Such changes were accompanied by an increase in the analytical component of educational activities.

The intercultural aspect of digital citizenship integration was one of the key factors influencing the nature of change. The results showed that the inclusion of intercultural communication in the digital environment was accompanied by a more flexible approach to the interpretation of information and the use of language tools. This is consistent with the findings of Utami et al. (2025), which notes that digital citizenship in a post-truth environment is directly related to identity formation and the ability to critically perceive information. In this context, language education acts not only as a tool for communication, but also as an environment for the development of critical thinking.

The results also confirm the feasibility of integrating digital citizenship into the language education system from the perspective of

modern approaches to literacy. Thus, von Gillern et al. (2024) consider digital citizenship as an integral component of modern language education, which should be integrated into various types of learning activities. In the conducted study, this provision is specified through the structural reorganization of classes, where each type of speech activity is combined with the analysis of digital content. This approach is accompanied by a change in the nature of learning, which is manifested in the increase in the role of analytical and communicative actions.

From a conceptual point of view, the results of the study are consistent with the definition of digital citizenship as a complex system of competencies. Webster (2025) defines digital citizenship as a set of cognitive, ethical and social elements that are formed in the process of interaction with the digital environment. A similar structure was implemented in the study through a combination of cognitive, communicative and ethical components. This indicates the compliance of the proposed model with modern theoretical approaches.

At the same time, the results obtained should be considered in the broader context of modern transformations of digital education and the development of digital skills. According to Eurostat (2023; 2024a; 2024b; 2025), the level of digital literacy of the population is directly related to the educational environment and access to educational resources, while it is educational practices that determine the quality of the skills formed. In this study, the changes recorded were accompanied by an increase in the analytical component of educational activities, which correlates with the trends identified at the macro level.

A similar connection between the educational environment and the development of digital competences is also noted in OECD reports (2024; n.d.), which emphasize the existence of a digital divide in education and the need to integrate digital skills into the content of education. Within the framework of the study, the implementation of the integration model was

accompanied by an increase in student engagement and the complexity of educational activities, which corresponds to the above approaches.

In addition, the structural organization of the model is consistent with the framework approaches to digital competence presented by Vuorikari et al. (2022), according to which digital literacy includes cognitive, social and ethical components. In the study, a similar structure was accompanied by differentiated dynamics of the development of indicators, reflecting the complexity of the formation of digital citizenship in the educational environment.

At the same time, it is necessary to take into account the limitations of the study. The pilot nature of the sample ($n=32$) limits the possibility of generalizing the results to a wider population. In addition, the absence of a control group does not allow us to unambiguously establish a cause-and-effect relationship between the implementation of the model and the recorded changes. The use of only two measurement points also limits the possibility of a detailed analysis of the dynamics of changes over time. In this regard, it is advisable to consider the results obtained as indicative.

Thus, the results of the study demonstrate that the integration of digital citizenship into language education is accompanied by a change in the nature of educational activities, the development of critical digital literacy and an increase in the quality of intercultural communication. This emphasizes the importance of the systematic implementation of relevant models in modern educational practice and logically leads to the formulation of the study's conclusions.

6. Conclusions

The research achieved its goal – a pedagogical model for integrating digital citizenship into the language education process was developed and tested. It was found that effective integration occurs through the transformation of the structure of educational activities, within which

speech activity is combined with the analysis of digital content, intercultural communication, and the formation of ethical norms of interaction.

The results obtained showed positive dynamics of changes in the level of critical digital literacy of students. In particular, an increase in the quality of digital content analysis, an increase in the level of argumentation of statements and a more structured participation in intercultural communication were recorded. The volume of written responses increased approximately twice, and the proportion of students with a high level of formation of the studied skills increased. At the same time, it was established that the cognitive and communicative components demonstrate more pronounced dynamics, while the ethical component is formed gradually.

The practical significance of the study lies in the possibility of using the proposed model to modernize foreign language courses. It is recommended to implement the integration of digital citizenship through the systematic

inclusion of analytical tasks, the organization of intercultural discussions, and the use of a blended learning format that combines synchronous and asynchronous interaction.

However, the study has limitations. The pilot nature of the sample (n=32) does not allow generalization of the results to the wider population, and the lack of a control group makes it difficult to establish cause-and-effect relationships. In addition, the use of only two measurement points limits the possibility of detailed analysis of the dynamics of change.

Prospects for further research are related to the expansion of the sample, the use of control groups and the introduction of multiple measurements. It is also advisable to analyze the impact of different digital educational environments on the results of integration. Thus, the results obtained confirm the potential of integrating digital citizenship into language education as an effective direction for the development of critical digital literacy.

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8. Author Declaration

The authors confirm that this manuscript is an original work, has not been previously published, and is not under consideration for publication elsewhere. All sources, ideas, and materials used in the preparation of this article have been appropriately cited in accordance with academic standards.

The authors declare that there are no conflicts of interest, financial or otherwise, that could have influenced the research design, data collection, analysis, interpretation, or the presentation of the findings.