



METHODOLOGY FOR ENHANCING STUDENTS' INTELLECTUAL- COMMUNICATIVE COMPETENCE THROUGH ARTIFICIAL INTELLIGENCE IN INCLUSIVE EDUCATION

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Abstract

This article examines the development of students' intellectual-communicative competence in inclusive higher education through the pedagogically purposeful integration of artificial intelligence (AI) technologies. The relevance of the study stems from the growing need to move beyond predominantly reproductive and technology-centred approaches towards an educational model in which AI serves as a means of stimulating students' intellectual activity, communication, autonomy, and reflection rather than replacing the teacher or the learner's independent thinking. Drawing on contemporary approaches to communicative competence, competency-based education, inclusive pedagogy, Universal Design for Learning, personalized learning, and AI-assisted language education, the study clarifies the conceptual content of students' intellectual-communicative competence and proposes an original four-component structural model. The model incorporates motivational-axiological, cognitive-intellectual, communicative-activity, and reflective-regulatory components. The article identifies key pedagogical conditions for the effective integration of AI into inclusive education, including personalization, differentiation, accessibility, interactivity, critical evaluation, reflection, teacher mediation, and ethically responsible use of AI technologies. A five-stage methodology based on the sequence "diagnosis – intellectualization –



communication – feedback – reflection” is developed. Criteria, indicators, and levels for assessing students’ intellectual-communicative competence are also proposed. The theoretical analysis of contemporary research indicates that AI has considerable potential for supporting language learning, personalized instruction, communicative practice, and self-regulated learning. At the same time, the literature demonstrates a continuing shortage of empirically validated comprehensive models that simultaneously integrate AI, intellectual development, communicative competence, and inclusive education. The proposed methodology therefore provides a theoretical and methodological framework for subsequent experimental investigation in authentic higher-education contexts.

Keywords: artificial intelligence, intellectual-communicative competence, inclusive education, foreign language education, digital pedagogy, personalized learning, communicative competence, critical thinking, reflection, higher education.

INTRODUCTION

The contemporary transformation of higher education is characterized by the simultaneous influence of two major processes: the digitalization of the educational environment and the increasing emphasis on inclusive education. Under these conditions, traditional educational practices, which have largely focused on the transmission and reproduction of ready-made knowledge, are no longer sufficient to meet the requirements of modern professional education.

This issue is particularly significant in foreign language education. In the contemporary educational environment, foreign language proficiency can no longer be reduced to knowledge of grammatical rules, vocabulary, and the ability to reproduce previously learned speech patterns. Students are expected to analyze information, interpret meaning, formulate and justify their own positions, interact effectively with other participants in communication, critically evaluate information, and use language to address authentic intellectual and communicative problems.



Consequently, the purpose of contemporary foreign language education is gradually shifting from the development of predominantly linguistic competence towards the formation of an integrated ability to use language as a tool for thinking, interaction, problem-solving, and social action.

The theoretical foundations of this understanding of communication can be traced back to the concept of communicative competence proposed by D. Hymes, who expanded the notion of linguistic ability beyond formal grammatical correctness and connected it with the actual use of language in social contexts [1]. This approach was further developed by M. Canale and M. Swain, who conceptualized communicative competence as a combination of interrelated components required for effective second-language use [2]. Subsequent models of language ability placed increasing emphasis not only on knowledge but also on the ability to apply knowledge in specific communicative situations. In particular, L. Bachman conceptualized communicative language ability as a complex system that can be examined through systematic and criterion-referenced assessment [3].

The contemporary approach of the Council of Europe also demonstrates an expansion of the concept of language competence. The CEFR Companion Volume incorporates not only language activities but also interaction, online communication, mediation, and plurilingual and pluricultural competence [4]. This perspective makes it possible to understand communicative competence as a dynamic ability to act through language rather than simply as a collection of linguistic resources.

At the same time, the rapid development of artificial intelligence has created new opportunities for foreign language education. Contemporary AI systems can support dialogue-based interaction, generate educational materials, simulate communicative situations, provide feedback, and facilitate individualized learning pathways.

A review of 812 publications on artificial intelligence in language education conducted in 2024 demonstrates substantial growth in this research area. The authors



emphasize that AI-enhanced language education lies at the intersection of computer science, linguistics, and psychology, while also identifying a shortage of empirical research and insufficiently developed forms of individualized learning [5].

A meta-analysis of research on AI-supported second-language learning likewise reported positive effects of AI-based interventions on language-learning outcomes, particularly when AI was incorporated into adaptive learning, blended learning, and multiple-feedback environments [6].

However, the availability of technological possibilities does not automatically guarantee methodological effectiveness. A fundamental question therefore arises: **How can artificial intelligence be integrated into the educational process in such a way that it contributes not to the mechanical completion of educational tasks, but to the development of students' thinking, communication, autonomy, and reflection?**

This question constitutes the central research problem of the present study.

MATERIALS AND METHODS

The methodological framework of the study is based on competency-based, communicative-activity, learner-centred, inclusive, and technological approaches.

The following research methods were employed:

- analysis of scientific and pedagogical literature;
- comparative analysis of pedagogical and language-teaching concepts;
- systematization of theoretical approaches;
- theoretical modelling;
- analysis of contemporary studies on the application of AI in language education;
- pedagogical design;
- development of competence assessment criteria;
- theoretical synthesis and generalization.



At the first stage, theoretical approaches to communicative competence and contemporary models of language education were analyzed.

At the second stage, studies devoted to the use of artificial intelligence in foreign language education were examined.

At the third stage, the principles of inclusive pedagogy, personalized learning, and Universal Design for Learning were synthesized with contemporary approaches to AI-supported education.

At the fourth stage, an original structural and functional model for enhancing students' intellectual-communicative competence was developed.

RESULTS

1. Theoretical Clarification of the Concept of Intellectual-Communicative Competence

One of the central theoretical issues addressed in this study is the absence of a universally accepted definition of the concept of “intellectual-communicative competence” in the context of contemporary foreign language higher education.

Within the framework of this study, intellectual-communicative competence is understood as:

an integrative ability of a student to consciously perceive, analyze, interpret, and critically evaluate information; independently formulate and substantiate a personal position through a foreign language; interact effectively with other participants in communication; solve intellectual and communicative problems; and regulate educational activity through reflection.

This definition differs fundamentally from an interpretation of competence as a simple combination of linguistic and intellectual skills.

The **intellectual dimension** includes:

- analysis;
- synthesis;
- comparison;



- classification;
- interpretation;
- critical evaluation;
- argumentation;
- problem-solving;
- decision-making.

The **communicative dimension** includes:

- understanding the interlocutor;
- expressing one's own position;
- producing coherent discourse;
- participating in reasoned interaction;
- engaging in dialogue;
- cooperation;
- mediation;
- adapting communication to the context and communicative situation.

The **reflective dimension** connects these two areas because students should not merely complete a communicative task; they should also understand **how** they performed it, which strategies they employed, which difficulties they encountered, and which errors they made.

Thus, intellectual-communicative competence should be understood as an integrated educational outcome in which cognitive activity and language-mediated interaction are inseparable.

2. Structural Model of Intellectual-Communicative Competence

Based on the theoretical analysis, a four-component structure of intellectual-communicative competence is proposed.



No.	Component	Main Content	Indicators
1	Motivational-axiological	Attitudes towards intellectual and communicative activity	Cognitive motivation, willingness to communicate, positive attitude towards learning
2	Cognitive-intellectual	Intellectual processing of information	Analysis, synthesis, critical thinking, problem-solving, argumentation
3	Communicative-activity	Practical use of language	Dialogue, monologue, discussion, collaboration, mediation
4	Reflective-regulatory	Awareness and regulation of one's own activity	Self-assessment, error analysis, use of feedback, strategy adjustment

This structure makes it possible to overcome the artificial separation between “thinking” and “communication.”

Within the proposed framework, intellectual activity is regarded as the substantive content of communication, while communication functions as a means of implementing intellectual activity.

In other words, the student does not simply **speak in a foreign language** but **uses the foreign language to solve an intellectual problem**.

This principle represents one of the central theoretical foundations of the proposed methodology.

3. Artificial Intelligence as a Pedagogical Tool

Contemporary research demonstrates that artificial intelligence is already being used in a variety of forms of language education.



A systematic review of studies on ChatGPT in language education found that the most common areas of application include support for autonomous learning, content generation, assistance with writing, and pedagogical workflows. At the same time, researchers emphasize the need for further investigation of feedback quality, long-term effects, and the diversity of research contexts [7].

Of particular importance for the proposed methodology is the transition from the model:

“student → AI → ready-made answer”

to the model:

“student → intellectual task → AI as a tool → verification → argumentation → communication → reflection.”

In the first model, there is a risk that students may become dependent on ready-made results.

In the second model, artificial intelligence is employed as a cognitive tool that stimulates the learner's own intellectual activity.

This approach is consistent with contemporary perspectives on human-AI interaction in language education. A recent thematic review identifies several interaction paradigms, including models in which AI and the teacher jointly guide student activity while the learner remains an active participant and co-creator of the learning process [8].

Therefore, the methodological objective should not be to maximize the quantity of AI use, but rather to **optimize the educational nature of students' interaction with AI.**

4. The Inclusive Dimension of the Proposed Methodology

Inclusive education requires the creation of conditions in which differences among students do not become barriers to meaningful participation in the educational process.



In this context, the principles of Universal Design for Learning (UDL) are particularly significant. The contemporary UDL Guidelines 3.0 emphasize the reduction of educational barriers and the provision of multiple means of engagement, communication, expression, and access to learning technologies [9].

Within the proposed methodology, this means that the same intellectual-communicative task may be completed through different forms of participation and expression.

For example, the task:

“Analyze the advantages and disadvantages of artificial intelligence in education and defend your position.”

may be implemented through:

1. a written argumentative essay;
2. an oral presentation;
3. a dialogue with an AI system;
4. a group discussion;
5. a presentation;
6. a multimedia message;
7. a structured argument table.

Thus, the form of expressing the result may vary, while the intellectual objective remains unchanged.

This principle is particularly important for inclusive methodology: **individualization should not reduce the intellectual complexity of the educational task; rather, it should provide different pathways through which students can achieve a common educational goal.**

Such an approach makes it possible to combine inclusiveness with high academic expectations.

5. The Author's Methodological Model

Based on the theoretical analysis, a five-stage methodology is proposed.



Stage 1. Diagnostic Stage

The first stage determines students' initial level of intellectual-communicative competence.

The following abilities are assessed:

- ability to understand information;
- ability to identify key ideas;
- analytical skills;
- critical evaluation;
- argumentation;
- oral communication;
- written communication;
- ability to engage in self-assessment.

Stage 2. Intellectualization

At this stage, students are presented with a problem-based task.

For example:

“Should artificial intelligence replace some traditional forms of foreign language learning?”

Students are expected to:

1. formulate an initial position;
2. identify supporting arguments;
3. identify counterarguments;
4. verify relevant information;
5. formulate a reasoned conclusion.

AI may be used at this stage to generate alternative arguments, questions, examples, or counterarguments.

However, the final decision and evaluation remain the responsibility of the student.

Stage 3. Communicative Interaction



At this stage, students use the results of their intellectual work in authentic or simulated communication.

Possible forms of activity include:

- debates;
- discussions;
- role-play;
- problem-solving activities;
- peer interaction;
- presentations;
- AI-mediated dialogue.

The essential feature of this stage is the transformation of individual intellectual processing into communicative action.

Stage 4. Feedback

AI may be used to provide preliminary feedback concerning:

- linguistic accuracy;
- textual organization;
- coherence;
- lexical range;
- quality of argumentation;
- logical sequencing.

However, the final pedagogical interpretation of AI-generated feedback should be conducted by both the teacher and the student.

UNESCO emphasizes the importance of a human-centred approach to generative AI, including pedagogical appropriateness, safety, equity, and data protection [10].

Consequently, AI should not be treated as an autonomous evaluator of educational achievement.

Stage 5. Reflection



At the final stage, students reflect on their learning experience and answer questions such as:

- What have I learned?
- Which arguments changed or challenged my initial position?
- What mistakes did I make?
- Which AI recommendations were useful?
- Which recommendations were inaccurate, incomplete, or questionable?
- What did I change independently?
- Which strategies will I use in the next task?

Reflection transforms the use of AI from a purely technological action into a meaningful educational activity.

6. Pedagogical Conditions for the Effectiveness of the Methodology

The theoretical analysis made it possible to identify seven pedagogical conditions.

First condition — purposeful use

AI should be employed only when its application is directly connected with a specific educational objective.

Second condition — preservation of student agency

The student should remain the author and decision-maker responsible for the final intellectual and communicative product.

Third condition — differentiation

The complexity, format, and scope of tasks should be adapted to students' individual educational needs while maintaining the intended learning outcomes.

Fourth condition — accessibility

Learning materials should be provided in different formats that enable students with diverse educational needs to participate effectively.

Fifth condition — critical evaluation of AI-generated responses



Students should regard AI-generated information not as unquestionable truth but as a resource that requires verification, comparison, and critical evaluation.

Sixth condition — reflection

Every substantial use of AI should be followed by reflection on the process and outcome.

Seventh condition — pedagogical mediation

The teacher retains the functions of educational designer, facilitator, moderator, consultant, and expert.

7. Criteria for Assessing Intellectual-Communicative Competence

For subsequent pedagogical experimentation, four principal assessment criteria are proposed.

Motivational-Axiological Criterion

Indicators include:

- interest in intellectual-communicative activity;
- willingness to participate in communication;
- positive attitude towards autonomous learning;
- responsibility for learning outcomes.

Cognitive-Intellectual Criterion

Indicators include:

- analysis of information;
- comparison of sources;
- identification of cause-and-effect relationships;
- formulation of conclusions;
- critical evaluation;
- argumentation;
- solving problem-based tasks.

Communicative-Activity Criterion

Indicators include:



- clarity of speech;
- logical organization of discourse;
- linguistic appropriateness;
- ability to maintain dialogue;
- reasoned expression of a position;
- cooperation;
- mediation.

Reflective-Regulatory Criterion

Indicators include:

- self-assessment;
- identification of personal errors;
- ability to receive and critically evaluate feedback;
- adjustment of one's own learning strategy;
- conscious and responsible use of AI.

For diagnostic purposes, three levels may be distinguished:

high, medium, and low.

These levels should subsequently be operationalized through measurable descriptors and validated assessment instruments before being applied in an empirical study.

8. Distinctive Features of the Author's Methodology

The scientific value of the proposed approach does not lie simply in the use of artificial intelligence. AI is already widely represented in contemporary educational practice.

The novelty lies in the **reconceptualization of the didactic function of AI.**

In a conventional technology-oriented model, a digital tool is often used according to the sequence:

information retrieval → task completion → result.

In the proposed methodology, the sequence is transformed into:



problem → analysis → interaction with AI → critical verification → independent decision → communication → feedback → reflection.

Thus, artificial intelligence is incorporated not at the end of the learning process, but into its intellectual core.

This makes it possible to conceptualize AI not merely as a means of automation but as a potential **cognitive-communicative mediator**.

DISCUSSION

The results of the theoretical analysis support the need for a comprehensive approach to the use of artificial intelligence in language education.

First, contemporary theories of communicative competence demonstrate that effective language proficiency cannot be reduced to knowledge of the linguistic system. Hymes' concept [1], the Canale and Swain model [2], and Bachman's model [3] progressively broadened the understanding of the ability to use language effectively in real interaction.

Second, the contemporary CEFR framework places considerable emphasis on learner activity, interaction, and mediation. This is particularly relevant to the proposed concept because intellectual-communicative competence involves not only producing language but also interpreting information, cooperating with others, and transferring meaning across different situations.

Third, recent studies on AI-supported language learning indicate considerable potential for artificial intelligence. Systematic research on AI in EFL education has reported positive outcomes across various language skills, while simultaneously emphasizing the need for further investigation into the methodological integration of AI within diverse pedagogical approaches [11].

Fourth, meta-analytic evidence indicates that the effectiveness of AI interventions is influenced by contextual factors, duration, feedback characteristics, and the degree of personalization [6]. This supports the central methodological



position of the present study: **the educational effect depends not simply on the presence of AI but on the pedagogical design of its use.**

Fifth, contemporary research on conversational AI in language education reports promising outcomes in both cognitive and affective domains; however, the research field remains characterized by limitations in contextual diversity and a need for more rigorous experimental designs [12].

The proposed approach therefore develops existing research by bringing together three dimensions:

AI + intellectual development + inclusive communication.

Their integration is regarded as the principal methodological condition for the development of a new form of educational activity.

SCIENTIFIC NOVELTY

The scientific novelty of the study is reflected in the following contributions:

1. The concept of “students’ intellectual-communicative competence” has been theoretically clarified in relation to contemporary foreign language higher education.

2. A structural model of intellectual-communicative competence has been developed, incorporating motivational-axiological, cognitive-intellectual, communicative-activity, and reflective-regulatory components.

3. The methodological function of artificial intelligence as a cognitive-communicative tool rather than a mechanical generator of ready-made answers has been theoretically substantiated.

4. The pedagogical conditions required for integrating AI into inclusive educational processes have been identified.

5. A competence-development cycle has been developed:

diagnosis → intellectualization → communication → feedback → reflection.



6. Criteria, indicators, and levels for assessing intellectual-communicative competence have been proposed.

7. The integration of Universal Design for Learning principles with the possibilities of artificial intelligence has been theoretically substantiated.

PRACTICAL SIGNIFICANCE

The practical significance of the study lies in the possibility of applying the proposed methodology:

- in foreign language instruction at higher education institutions;
- in the development and revision of educational programs;
- in the design of practical language classes;
- in the development of individualized educational pathways;
- in inclusive educational groups;
- in organizing students' independent learning;
- in developing critical thinking;
- in strengthening academic communication;
- in the preparation of future foreign language teachers.

The proposed system can be adapted to different levels of foreign language proficiency and various formats of educational organization.

PROSPECTS FOR EXPERIMENTAL RESEARCH

The next stage of the research should involve empirical validation of the effectiveness of the proposed methodology.

A pedagogical experiment may be organized according to the following structure:

preliminary diagnostic stage → formative stage → control stage.

During the diagnostic stage, the initial level of students' intellectual-communicative competence is established.

During the formative stage, students in the experimental group receive instruction based on the proposed methodology.



The control group continues its educational activities according to the established instructional approach.

At the control stage, repeated assessment is conducted to identify changes in the investigated competence.

Depending on the sample size and distributional characteristics of the data, the analysis may include:

- mean values;
- standard deviations;
- percentage distributions;
- statistical significance tests;
- comparative analysis of the experimental and control groups;
- effect-size estimation.

Where the required statistical assumptions are satisfied, both parametric and non-parametric statistical procedures may be employed.

The experimental design should also include clearly defined assessment instruments, inter-rater procedures where appropriate, pre-test and post-test measures, and indicators corresponding to the four structural components of the competence.

CONCLUSION

The theoretical analysis conducted in this study indicates that enhancing students' intellectual-communicative competence through artificial intelligence represents a promising direction in contemporary foreign language education.

The relevance of this issue is associated with the need to simultaneously ensure high-quality foreign language education, develop students' intellectual autonomy, and create an inclusive educational environment.

Within the proposed framework, intellectual-communicative competence is understood as an integrative personal capacity that enables students to use a foreign



language to analyze information, solve problems, formulate and justify positions, interact with other participants in communication, and regulate their own learning through reflection.

The proposed four-component structure integrates motivational, cognitive, communicative, and reflective dimensions of educational activity.

A particularly important aspect of the proposed approach is the reconsideration of the role of artificial intelligence. AI should not replace students' intellectual activity. Rather, its pedagogically appropriate application should create additional opportunities for analysis, comparison, argumentation, communication, and reflection.

In inclusive education, AI can support personalization and flexibility in the educational process. However, its implementation should be guided by the principles of accessibility, pedagogical appropriateness, learner agency, data protection, and critical evaluation of AI-generated information.

Thus, a promising methodological framework can be represented through the following sequence:

diagnosis → intellectualization → communication → feedback → reflection.

Such an organization makes it possible to move from technology-oriented AI use towards a pedagogically and methodologically grounded model of AI integration.

A promising direction for further research is the implementation of a pedagogical experiment involving higher-education students, the development and validation of diagnostic instruments, quantitative assessment of competence development, and statistical verification of the effectiveness of the proposed methodology.



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