

ENHANCING FOREIGN LANGUAGE ACQUISITION: INNOVATIVE COGNITIVE STRATEGIES AND TOOLS

MELHORAR A AQUISIÇÃO DE LÍNGUAS ESTRANGEIRAS: ESTRATÉGIAS E FERRAMENTAS COGNITIVAS INOVADORAS

Mariana Broda

Department of English Language Practice and Teaching Methodology, Faculty of Ukrainian and Foreign Philology, Drohobych Ivan Franko State Pedagogical University, Drohobych, Ukraine.

mariana.broda@dspu.edu.ua

Kaleriia Kovalova

Department of Foreign Languages and Cross-Cultural Communication, Faculty of Training Foreign Citizens, Simon Kuznets Kharkiv National University of Economics, Kharkiv, Ukraine.

valeriykovaleva@gmail.com

Iryna Bezugla

Department of Foreign Languages and Cross-Cultural Communication, Faculty of Training Foreign Citizens, Simon Kuznets Kharkiv National University of Economics, Kharkiv, Ukraine.

iravb@ukr.net

Olesia Stoika

Foreign Languages Department, Faculty of Foreign Philology, Uzhhorod National University, Uzhhorod, Ukraine.

olesya.stoyka@uzhnu.edu.ua

Kateryna Mulyk

Germanic and Oriental Languages and Methods of their Teaching Department, Faculty of Foreign Languages, South Ukrainian National Pedagogical University named after K. D. Ushynsky, Odesa, Ukraine.

m.katrin81@gmail.com

ABSTRACT

The article is devoted to analysing cognitive aspects of foreign language learning, including theoretical foundations, modern approaches and innovative technologies such as artificial intelligence and interactive tools. It emphasises the importance of considering cognitive processes, in particular memory, attention and motivation, to improve the efficiency of the learning process. The study's relevance is driven by the need to improve the effectiveness of foreign language learning in the context of globalisation, multiculturalism and the development of information technology. Focusing on the cognitive aspects of learning allows us to consider learners' individual characteristics, improving their motivation, engagement and learning. The article aims to study the cognitive aspects of foreign language learning and develop recommendations for implementing cognitively oriented methods in the educational process using innovative technologies. The methods included theoretical analysis of the literature, systematisation of methods, empirical survey of teachers and students, and quantitative and qualitative data analysis. The study results show that cognitive approaches contribute to effectively learning foreign language material. Teachers and students positively evaluate interactive methods and gamification, although there is a need to improve technical support. It has been found that individual cognitive styles, memory, attention and motivation are key factors in effective learning.

Keywords: Cognitive approach, Foreign languages, Intercultural communication, Motivation, Teaching technologies.

RESUMO

O artigo é dedicado à análise dos aspectos cognitivos da aprendizagem de línguas estrangeiras, incluindo fundamentos teóricos, abordagens modernas e tecnologias inovadoras, como a inteligência artificial e as ferramentas interativas. Realça a importância de considerar os processos cognitivos, em particular a memória, a atenção e a motivação, para melhorar a eficiência do processo de aprendizagem. A relevância do estudo é motivada pela necessidade de melhorar a eficácia da aprendizagem de línguas estrangeiras no contexto da globalização, da multiculturalidade e do desenvolvimento da informática. Focar os aspectos cognitivos da aprendizagem permite-nos considerar as características individuais dos alunos, melhorando a sua motivação, envolvimento e aprendizagem. O artigo tem como objetivo estudar os aspectos cognitivos da aprendizagem de línguas estrangeiras e desenvolver recomendações para a implementação de métodos cognitivamente orientados no processo educativo com recurso a tecnologias inovadoras. Os métodos incluíram análise teórica da literatura, sistematização de métodos, investigação empírica de professores e alunos e análise quantitativa e qualitativa de dados. Os resultados do estudo mostram que as abordagens cognitivas contribuem para a aprendizagem eficaz de material em língua estrangeira. Os professores e os alunos avaliam positivamente os métodos interativos e a gamificação, embora haja necessidade de melhorar o apoio técnico. Verificou-se que os estilos cognitivos individuais, a memória, a atenção e a motivação são fatores-chave para uma aprendizagem eficaz.

Palavras-chave: Abordagem cognitiva, Línguas estrangeiras, Comunicação intercultural, Motivação, Tecnologias de ensino.

Introduction

In today's globalised, multicultural world, coupled with the rapid development of information technologies, the knowledge of foreign languages is a necessity and one of the key conditions for personal and professional development. Against this background, cognitive aspects revealing the nature of thinking, memory, attention, and other mental processes in language acquisition have a particular relevance. In a globalised society, the integration of cognitive and technological advances can significantly contribute to intercultural understanding and communication. The global world undoubtedly needs to improve didactic solutions to intensify foreign language learning to improve intercultural interaction.

Traditional approaches to teaching languages do not consider the individual features of the learner's cognitive peculiarities, which can reduce the effectiveness of the learning process (O'Malley & Chamot, 1990; Richards & Rodgers, 1986). In this respect, recent research on cognitive linguistics and psychology opens up prospects for integrating innovative tools such as artificial intelligence technologies, neural networks, and adaptive learning platforms that allow personalised learning into the learning process (Atkinson, 2002; Aydın, 2019; Lantolf, 2011).

The present stage of modernisation in education is characterised by changes in content, structure, performance, and goal basis, which essentially change the idea of foreign language teaching. Such a fact enables us to focus on the phenomenon of a cognitive approach, which is one of the main methodological principles of foreign language education. Cognitive skills are a cognitive process that involves perception, comprehension of information, its further assimilation and transformation into knowledge, and the use of acquired knowledge and skills in professional and communication spheres (Holme, 2012). With the proper training, cognitive foreign language skills can be improved, improving the productivity of the process. If the cognitive skills are weak, they can be strengthened using the necessary unique methodology.

The problem of our study is to identify the most effective methods and tools that take into account students' cognitive characteristics. In particular, the question

remains: How can traditional pedagogical approaches be combined with the latest technologies to ensure maximum engagement, motivation, and efficiency in learning?

Thus, it is urgent for educators, researchers, and practitioners to consider cognitive aspects of foreign language learning through the prism of modern technologies. This will allow not only to improve the quality of learning but also to create conditions for the harmonious development of intercultural communication in a globalised society.

Problem Statement:

The study aims to address the challenge of identifying methods and tools that effectively align with the cognitive characteristics of learners, particularly in the context of foreign language acquisition.

Research Question:

What are the best strategies for integrating traditional pedagogical methods with emerging technologies to enhance engagement, motivation, and efficiency in foreign language learning? Solving these problems is crucial for providing educators with innovative solutions that meet the changing requirements of modern education, can help build individual educational trajectories, and intensify the processes of personalisation of learning.

Objective:

This article aims to explore cognitive aspects of foreign language learning and identify practical tools and approaches that enhance learning quality, leveraging advancements in cognitive science, pedagogy, and technology.

Tasks:

1. Analyse the theoretical foundations of cognitive processes in foreign language learning, focusing on memory, attention, and thinking.

2. Examine the impact of cognitive processes on the acquisition and retention of foreign language materials.
3. Investigate modern teaching approaches that incorporate cognitive principles.
4. Evaluate the potential of innovative technologies, such as artificial intelligence and neural networks, in enhancing cognitive-based teaching methods.
5. Propose strategies for integrating advanced tools and technologies into foreign language teaching.

Literature review

The history of foreign language teaching methods and the emergence and development of new language teaching methods are closely linked to new linguistics, psychology and pedagogy trends. The data from these sciences can radically change the approach to teaching and contribute to the development of new methods, the emergence of new systems and models of teaching, and new didactic technologies. It is not surprising that approaches to teaching foreign languages based on knowledge of the cognitive function of language have recently become widespread. Implementing the cognitive theory of language teaching has become a new stage in the development of the theory and methodology of foreign language teaching.

Numerous studies in cognitive linguistics, psychology, and pedagogy have developed the cognitive approach to foreign language learning. The basic concepts of the cognitive approach were formulated in studies analysing the nature of thinking and speech activity (Chomsky, 1988, 2000). Chomsky's theory of universal grammar and its extension to the cognitive plane became the basis for understanding mental processes in speech activity.

Humanity has been interested in the problems of cognition and understanding since ancient times. The study of where and how human knowledge and experience are stored has outlined the subject area of the modern

interdisciplinary approach to the study of cognition - cognitive science, which aims to gain knowledge about knowledge, focusing on the problems associated with obtaining, processing, storing, retrieving and operating with knowledge. These problems relate to all procedures that characterise the use of knowledge in human behaviour and, most importantly, in thinking and communication. Cognitive science deals with information about the world, studying complex phenomena of human existence, such as perception of the world and reflection of the perception in the human mind, such as brain languages, memory and organisation of human cognitive abilities. Cognitive linguistics, as a theoretical basis for the development of foreign language teaching methods, is studied in the works of such authors as Evans (2015), Croft and Cruse (2005), Achard and Niemeier (2004), Diessel (2019), Pütz and Sicola (2010). Their work explains how language structure reflects conceptual categories of thinking, allowing us to integrate these principles into language teaching.

The cognitive approach tools are currently being actively explored in phraseology, idioms, and grammatical construction studies. For instance, Al-Otaibi (2019) and Hung (2019) show how cognitive linguistics helps better understand such linguistic units. Wang (2020, 2021) delves into the application of cognitive linguistics to teaching English idioms and the effect of positive psychology on learning.

Chapelle (2009), Kim and Rah (2020) outline how technology can be used within the learning process and consider whether computer-based learning and adaptive learning environments may increase outcome effectiveness. Wang et al. (2021) investigate the applications of positive psychology for improving the learning process about digital technologies.

It was contributed by researchers concerned with cognitive aspects in the learning environment, such as Littlemore (2009), Holme (2009, 2012), Robinson and Ellis (2008). Such research points to the necessity of adapting teaching strategies to learners' cognitive features.

Empirical research confirms the effectiveness of the cognitive approach for language skills development. Kliesch et al. (2021) show that learning new languages

positively affects cognitive function in older age, while van der Ploeg et al. (2023) explore the role of pedagogy in supporting cognitive abilities.

While Mandler (2004) and Rosch (1978) focused on cognitive categories, which became a concern for language competence, these works laid down the foundation for teaching methodology based on cognitive processes.

Thus, the abovementioned research confirms that the cognitive approach to foreign language learning contributes to a deeper acquisition of language structures, the development of critical thinking, and improved overall learning efficiency. This opens up prospects for further integrating innovative technologies and developing adaptive methods in foreign language teaching.

Methods

The study was carried out in several stages, which guaranteed the achievement of the goal and objectives. The first stage of work consisted of the theoretical analysis of the scientific literature on cognitive linguistics, psychology, pedagogy, and information technologies, which allowed the establishment of the primary approaches, principles, and theoretical grounds for a cognitive approach in foreign language learning. The next stage of systematisation and generalisation already included modern approaches and means of learning, considering the cognitive features of the learners. Due to this, a holistic picture of the influence of cognitive processes on the effectiveness of foreign language acquisition has appeared.

In the third stage, an empirical study was conducted, including a survey of teachers and students to investigate the experience of using cognitively oriented methods in practical practice. The fourth stage included quantitative and qualitative analysis of the results. Empirical data were processed using statistical methods of analysis, which allowed an assessment of the effectiveness of cognitively oriented approaches. Meanwhile, qualitative analysis of the feedback from the participants of the current study provided far more insight into the practical aspects of the implementation of these methods. At the fifth and final stage, recommendations for

teachers on using cognitively oriented approaches and the latest tools in the educational process were developed.

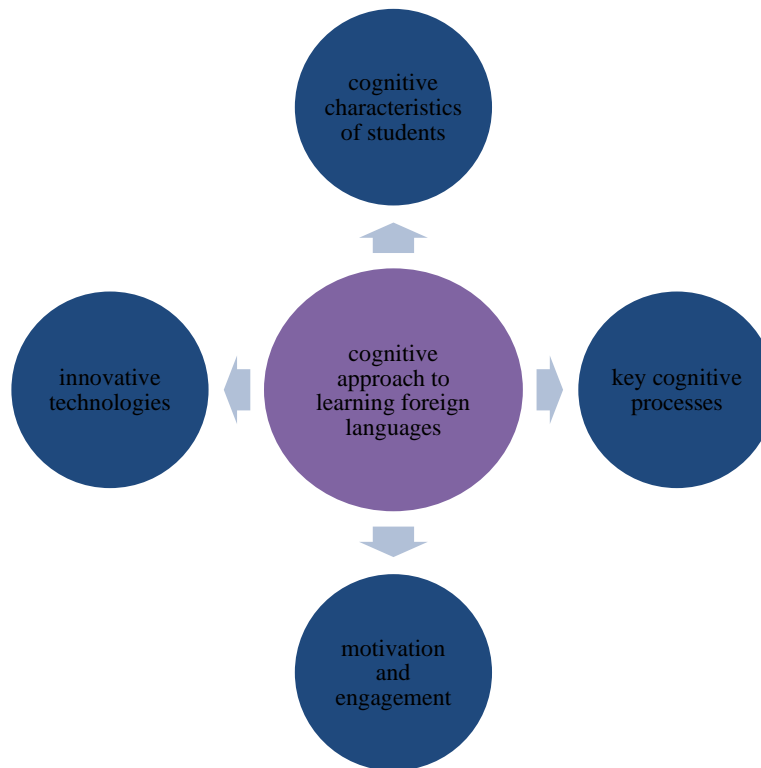
Results

Summarising and generalising the material on modern methodologies and techniques, it was possible to conclude that cognitive features among students play an important role in mastering a foreign language. It has been shown that the particular individual cognitive style defines learners' preferences about how to perceive and transform information, therefore requiring the adjustment of learning materials to a specific type of learning style.

Scholars identify memory and attention as the primary cognitive factors influencing the acquisition of lexical and grammatical structures. Highly effective techniques to activate short-term and long-term memory, such as repetition, associative techniques, and mnemonics, are used. In addition, the study highlighted the importance of motivation and engagement, which are directly related to cognitive processes (Lee, 2020). These can all be enhanced by using interactive activities, gamification, and adaptive learning platforms that consider every student's needs individually.

Artificial intelligence, mobile applications, and adaptive platforms proved valid tools for personalised learning. It allows students to analyse their progress and choose tasks corresponding to their cognitive abilities. Moreover, the emotional component of learning, closely related to cognitive mechanisms, was noted to have a positive effect on the level of learning. The integration of emotionally supporting aspects like positive feedback or the creation of a comfortable learning environment enhances better memorisation. Let us present these results as a diagram (Figure 1).

Figure 1 – The main parameters of the cognitive approach to learning foreign languages



Source: developed by the author.

The second stage resulted in a holistic understanding of cognitive processes' impact on learning effectiveness. This understanding allowed us to identify key aspects to consider when developing modern methods and outline the most effective tools for integrating students' cognitive characteristics into the learning process.

In the third stage, an empirical study examined the practical experience of using cognitively oriented methods in the educational process. It was based on a survey of teachers and students, which allowed for a deeper understanding of the peculiarities of implementing these methods and their impact on learning. The survey was conducted among 100 respondents, of whom 50 were teachers, and 50 were students. The main aim of the survey was to study the experience of using cognitively oriented methods in the educational process and assess their effectiveness. The results of the survey are given in Table 1.

Table 1 – Results of the survey of teachers and students

Category	Question	Answer	%	Number of respondents
Teachers	Do you use cognitive-oriented methods?	Yes	72	36
Teachers	Do you use cognitive-oriented methods?	No	28	14
Teachers	What tools do you use? (mobile applications, platforms, visual materials)	Various tools	54-68	27-34
Teachers	What difficulties do you face?	Lack of equipment, training, and student motivation	45-38-32	22-19-16
Teachers	Do you think these methods are effective?	Yes	84	42
Students	Do the methods help you learn better?	Yes	68	34
Students	What types of tasks are most effective?	Interactive exercises, videos	61	31
Students	How do you assess the impact of innovative technologies?	Positives	74	37
Students	Do you want to use cognitive methods more?	Yes	79	40

As can be seen from the data, most teachers (72%) actively use cognitively oriented methods. In comparison, some respondents (28%) indicated they do not use them due to limited access to resources or insufficient training. Among teachers, visual materials, interactive applications, and adaptive platforms have become an integral part of their work, although availability and technical support are still limited.

The students also expressed their positive assessment of these methods, as 68% of respondents said that they contributed to more effective learning. Students noted that the interactive exercises, video-based assignments, and innovative technologies significantly raised their motivation and interest in learning. At the same time, their enthusiasm for introducing cognitively oriented approaches is even

higher than that of teachers, as 79% of students expressed a desire to expand the use of such methods.

Both groups of respondents acknowledged the effectiveness of cognitively oriented approaches, especially in improving attention, memorisation and overall engagement in the learning process. However, teachers emphasised the difficulties associated with insufficient technical and methodological training, while students mainly reported positive experiences with innovative tools.

Comparing the two groups, it can be concluded that students are more supportive of integrating new approaches into the learning process, while teachers need additional resources and training to implement them effectively. The common point for both groups is the recognition that cognitively oriented methods create preconditions for more effective learning but require further improvement, including technical support and training of participants in the educational process.

Overall, the results show the great potential of cognitively oriented teaching methods, but they also indicate the need to adapt them to the needs of both teachers and students, ensure their accessibility, and eliminate existing obstacles.

At the fifth stage of the study, we develop recommendations for teachers aimed at the practical implementation of cognitively oriented approaches in the educational process, based on the study's previous results and taking into account the peculiarities of modern educational practice.

First, it is recommended that we focus on personalising learning, which involves adapting learning materials to the individual cognitive styles of learners (visual, auditory, and kinesthetic). Teachers should use interactive tasks that consider each style's preferences, such as visual diagrams, audio prompts, and activity-based practical tasks.

We also encourage students to develop their memory and attention by using techniques that activate cognitive processes. Teachers introduce mnemonics, associative learning, and repetition, which improve vocabulary and grammar learning. To maintain attention, we propose the use of gamification, interactive platforms, and tasks that stimulate active student participation.

The integration of innovative technologies constitutes an important recommendation. We encourage teachers to use adaptive educational platforms, mobile applications, and artificial intelligence technologies. This is a reasonable basis for the personalisation of learning and allows solving tasks by the flexible wishes of students in the most individual way.

We also focus on creating an emotionally supportive learning environment. Teachers provide positive feedback and maintain an atmosphere of cooperation and comfort, which increases motivation and learning efficiency.

Thus, our recommendations form a comprehensive approach to implementing cognitively oriented methods focused on creating conditions for maximising students' potential. We are confident that these recommendations can be applied both in traditional educational institutions and online, making them universal for modern educational practice.

Discussion

The cognitive approach to a foreign language focuses on the need to consider the differences in the way people think in different languages to consider the cognitive aspects of linguistic phenomena, i.e. to explain them in terms of their connection and interconnectedness with the processes of cognition of the world. This approach allows for a conscious approach to describing language in terms of national peculiarities of linguistic expression and understanding the real world, allowing for a better understanding and explanation of specific difficulties of a foreign language and a more effective organisation of the learning process.

The cognitive aspect is about knowing and considering the patterns of language acquisition. The task of the cognitive approach to teaching is to help the learner build this system of patterns. To do this, it is necessary to provide the learner not with ready-made knowledge but with adequate language acquisition strategies. The application of these strategies affects the development of learners' intellectual abilities, activation of their cognitive activity, and procedures for acquiring and using knowledge.

The aspect under discussion, therefore, is one of the most important means of shaping the worldview. Methods implemented in the context of the cognitive orientation of learning have a huge educational potential. They develop independence of thought and action, the desire to manage and evaluate their learning, and, in addition to mental development, contribute to the spiritual and social development of the individual. In general, our findings confirm the conclusions of other studies in the field of applying a cognitively oriented approach to foreign language teaching, in particular, Aydın (2019), Holme (2012), and Wang (2020). Our study has also demonstrated the significant potential of cognitively oriented methods to improve the effectiveness of foreign language teaching, especially in modern educational challenges. The phased nature of the study made it possible to form a holistic picture of the impact of learners' cognitive characteristics on their perception and processing of information, as well as to assess the effectiveness of tools and approaches to take these characteristics into account in the learning process.

The literature's theoretical analysis helped identify the main cognitive factors that affect learning, including individual cognitive styles, memory, attention, motivation and engagement. These aspects became the basis for an empirical study confirming the importance of adapting methods and innovative technologies (Segalowitz, 2010; Verspoor, 2017; Vovk, 2016).

The results of this survey among teachers and students indicate that both groups acknowledge the efficiency of cognitively oriented approaches. To be more specific, teachers pointed to the healthy impact of interactive tools and platforms on students' motivation and attention. In contrast, students stressed the convenience and efficiency of using technology for personalising learning. However, teachers face some problems related to technical support and lack of training for new approaches, which requires further support at an institutional level.

Interesting trends were observed when comparing the results obtained from teachers and students. Students, as consumers of educational services, are more active in supporting the integration of new approaches, while teachers are more cautious due to the insufficient technical and methodological resources. That means

it is necessary to create conditions for joint efforts that would enable the effective implementation of cognitive approaches.

What's more, the introduction of different new technologies—adaptive learning platforms, mobile applications, and artificial intelligence – is significant. These technologies are opening completely new opportunities for personalisation in studies by creating an individual approach for each student. With these tools, teachers can focus on the most essential elements of the learning process while shrinking their routine.

It has also been important so far, an emotional constituent of learning. Positive feedback, teacher support, and a comfortable environment contribute to better learning and increase students' overall interest in learning.

Conclusion

The article reviews the cognitive aspects of foreign language learning, which serve as a basis for analysing modern approaches and tools considering the individual cognitive features of learners. The research confirms the significance of integrating cognitively oriented methods into the learning process and shows their effectiveness in enhancing motivation, activity, and efficiency in mastering foreign language material.

A theoretical analysis was done to show that cognitive linguistics and psychology create a very reliable foundation for developing teaching methods that consider students' styles of perception and ways of processing information. Such innovative technologies as adaptive platforms, mobile applications, and artificial intelligence are included in the personalised learning-technical conditions, allowing for flexible materials adjustments in correspondence with each student's needs.

At the same time, empirical research has shown that teachers and students have a positive attitude toward cognitively oriented methods. Teachers noticed that interactive tasks and gamification are efficient but require technical support and training, while students highly valued cognitive approaches' role in enhancing memorisation and motivation.

The developed recommendations emphasise the necessity of creating an emotionally comfortable learning environment, using adaptive technologies, considering individual cognitive characteristics, and developing students' critical thinking, flexibility, and intercultural competence.

Thus, cognitively oriented methods of teaching foreign languages increase the efficiency of learning and create conditions for a more harmonious development of students. Further research in this area could be related to the improvement of technologies for personalisation and providing teachers with the corresponding resources to implement innovative methods.

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