Nykyporets Svitlana Stepanivna, the English language lecturer, Vinnytsia National Technical University, 95, Khmelnytske shose, Vinnytsia, 21021, Ukraine, e-mail: fotinia606@gmail.com, https://orcid.org/0000-0002-3546-1734

Melnyk Olesia Dmytrivna, PhD in Philology, Associate Professor, Vinnytsia National Technical University, 95, Khmelnytske shose, Vinnytsia, 21021, Ukraine, e-mail: prysyazhnalesya@gmail.com, https://orcid.org/0000-0002-2742-0051

Hadaichuk Nataliia Mykolaivna, the senior English language lecturer, Vinnytsia National Technical University, 95, Khmelnytske shose, Vinnytsia, 21021, Ukraine, e-mail: max3nov@gmail.com, https://orcid.org/0000-0001-8193-2376

Derun Vitalina Haroldivna, the senior English language lecturer, Vinnytsia National Technical University, 95, Khmelnytske shose, Vinnytsia, 21021, Ukraine, e-mail: derun@vntu.edu.ua.

Chopliak Viktoria Volodymyrivna, the English language lecturer, Vinnytsia National Technical University, 95, Khmelnytske shose, Vinnytsia, 21021, Ukraine, e-mail: nikavnuchkova@gmail.com

NEUROPEDAGOGICAL APPROACH ENHANCING FOREIGN LANGUAGE ACQUISITION IN NON-LINGUISTIC HIGHER EDUCATION INSTITUTIONS

Abstract. The current study investigates the role of neuropedagogy in enhancing foreign language learning outcomes in non-linguistic higher education institutions. Neuropedagogy is an interdisciplinary approach that combines neuroscience principles, cognitive psychology, and pedagogy to optimize learning experiences based on the understanding of human brain functions. The objective of the study is to examine the effectiveness of brain-based teaching strategies and supportive learning environments in promoting language acquisition, retention, and application, and to explore the positive perceptions of neuropedagogical interventions among students and educators.

The findings of this study indicate that the implementation of various brain-based teaching strategies, such as multi-sensory learning, spaced repetition, metacognitive strategies, chunking, contextual learning, and social interaction, have the potential to significantly improve language acquisition, retention, and application. In addition, a supportive learning environment that addresses students' emotional needs and fosters motivation has been shown to enhance language learning success by promoting emotional intelligence, intrinsic motivation, risk-taking, social interaction, and differentiated instruction.

Moreover, the study demonstrates the effectiveness of neuropedagogical interventions in improving language proficiency among students in non-linguistic

higher education institutions, confirming the value of incorporating brain-based teaching methods in foreign language education. Students and educators have expressed positive perceptions of neuropedagogical interventions, emphasizing their potential to address individual learning needs, foster engagement, and improve language learning experiences.

The conclusions of this study suggest that a better understanding of the cognitive processes involved in language learning, combined with the implementation of brain-based teaching strategies and supportive learning environments, can contribute to improved language proficiency, retention, and application in non-linguistic higher education institutions. Further exploration in this area could advance our knowledge of the optimal combination of neuropedagogical methods for different learner profiles, language levels, and educational contexts, as well as the potential benefits of integrating neuroscience principles into teacher training programs and technology-enhanced learning environments.

In summary, this study highlights the importance of neuropedagogy in enhancing foreign language learning outcomes in non-linguistic higher education institutions and emphasizes the need for continued research and development in this interdisciplinary field. By fostering a deeper understanding of the cognitive processes involved in language learning and implementing innovative teaching practices that cater to the unique challenges faced by students in today's globalized world, educators can contribute to more effective and engaging foreign language education experiences.

Key words: neuropedagogy, foreign language learning, non-linguistic higher education institutions, brain-based teaching strategies, supportive learning environment, language acquisition, cognitive processes, individual learning needs.

Никипорець Світлана Степанівна, викладач англійської мови, Вінницький національний технічний університет, 21021, Україна, м. Вінниця, Хмельницьке шосе, 95, e-mail: fotinia606@gmail.com, https://orcid.org/0000-0002-3546-1734

Мельник Олеся Дмитрівна, кандидат філологічних наук, доцент, доцент кафедри іноземних мов, Вінницький національний технічний університет, 21021, Україна, м. Вінниця, Хмельницьке шосе, 95, e-mail: prysyazhnalesya@gmail.com, https://orcid.org/0000-0002-2742-0051

Гадайчук Наталія Миколаївна, старший викладач англійської мови, Вінницький національний технічний університет, 21021, Україна, м. Вінниця, Хмельницьке шосе, 95, e-mail: max3nov@gmail.com, https://orcid.org/0000-0001-8193-2376

Дерун Віталіна Гарольдівна, старший викладач англійської мови, Вінницький національний технічний університет, 21021, Україна, м. Вінниця, Хмельницьке шосе, 95, e-mail: derun@vntu.edu.ua.

Чопляк Вікторія Володимирівна, викладач англійської мови, Вінницький національний технічний університет, 21021, Україна, м. Вінниця, Хмельницьке шосе, 95, e-mail: nikavnuchkova@gmail.com.

НЕЙРОПЕДАГОГІЧНИЙ ПІДХІД ЯК ПОТУЖНИЙ ЧИННИК ОПАНУВАННЯ ІНОЗЕМНИХ МОВ У НЕМОВНИХ ВНЗ

Анотація. У цьому дослідженні розглядається роль нейропедагогіки для покращення результатів навчання іноземної мови в нелінгвістичних вищих навчальних закладах. Нейропедагогіка — це міждисциплінарний підхід, який поєднує принципи нейронауки, когнітивну психологію та педагогіку для оптимізації навчального досвіду на основі розуміння функцій людського мозку. Мета дослідження полягає в тому, щоб дослідити ефективність стратегій навчання, заснованих на розумінні, і відповідних навчальних середовищ у сприянні засвоєнню, запам'ятовуванню та застосуванню іноземної мови, а також вивчити позитивне сприйняття нейропедагогічних підходів серед студентів і викладачів.

Результати цього дослідження вказують на те, що впровадження різних нейропедагогічних стратегій, таких як мультисенсорне навчання, повторення з інтервалом, метакогнітивні стратегії, фрагментація, контекстне навчання та соціальна взаємодія, мають потенціал для значного покращення засвоєння мови, а також запам'ятовування та коректного застосування слів. Крім того, було показано, що сприятливе навчальне середовище, яке відповідає емоційним потребам студентів і збільшує мотивацію, покращує успішність вивчення іноземної мови, сприяючи розвитку емоційного інтелекту, внутрішньої мотивації, соціальної взаємодії та диференційованого викладання.

Крім того, дослідження демонструє ефективність нейропедагогічних підходів у покращенні рівня володіння мовою серед студентів нелінгвістичних вищих навчальних закладів, підтверджуючи цінність включення методів нейролінгвістики в навчання іноземних мов. Студенти та викладачі висловили позитивне сприйняття нейропедагогічних підходів, підкреслюючи їхній потенціал для задоволення індивідуальних потреб у навчанні, сприяння взаємодії та покращення досвіду вивчення іноземної мови.

Висновки цього дослідження свідчать про те, що краще розуміння когнітивних процесів, пов'язаних із вивченням мови, у поєднанні з реалізацією стратегій навчання, заснованих на розумінні і заохочувальних навчальних середовищ, може сприяти покращенню володіння іноземною мовою, її опануванню та застосуванню в нелінгвістичних ВНЗ. Подальші дослідження в цій галузі могли б розширити наші знання про оптимальне поєднання нейропедагогічних методів для різних профілів учнів, рівнів мови та освітніх контекстів, а також про потенційні переваги інтеграції принципів нейронауки в програми підготовки вчителів і технологічно вдосконалене навчальне середовище.

Підсумовуючи, це дослідження підкреслює важливість нейропедагогіки для покращення результатів навчання іноземних мов у нелінгвістичних вищих

навчальних закладах і наголошує на необхідності продовження досліджень і розробок у цій міждисциплінарній галузі. Сприяючи глибшому розумінню когнітивних процесів, пов'язаних із вивченням іноземної мови, і впроваджуючи інноваційні практики викладання, які відповідають унікальним викликам, з якими стикаються студенти в сучасному глобалізованому світі, викладачі можуть зробити свій внесок у більш ефективний і привабливий досвід навчання іноземних мов.

Ключові слова: нейропедагогіка, вивчення іноземних мов, нелінгвістичні вищі навчальні заклади, стратегії нейронавчання, сприятливе навчальне середовище, оволодіння мовою, когнітивні процеси, індивідуальні навчальні потреби.

Formulation of the problem. The significance of learning foreign languages has gained considerable importance, particularly in non-linguistic higher education institutions. Neuropedagogy, an emerging interdisciplinary field that bridges neuroscience, psychology, and pedagogy, has the potential to greatly influence foreign language learning outcomes. This study aims to investigate the problem of inadequate foreign language acquisition in non-linguistic higher education institutions and explore the role of neuropedagogy in overcoming this challenge. By analysing the relationship between brain-based teaching strategies and language learning, we seek to provide valuable insights that may contribute to both the scientific and practical aspects of foreign language education.

Despite the increasing need for proficient foreign language speakers in a globalized world, many students in non-linguistic higher education institutions struggle with acquiring foreign languages. Traditional teaching methods often fail to address individual learning needs and cognitive processes, which hampers students' ability to effectively learn and apply language skills. As a result, graduates from these institutions are often underprepared to face the linguistic demands of their professional lives.

Neuropedagogy, as a scientific approach, combines knowledge from neuroscience, psychology, and pedagogy to create learning environments and teaching strategies that cater to the brain's natural mechanisms of acquiring and processing information. By examining the role of neuropedagogy in foreign language learning, this study aims to address the following key scientific and practical tasks:

a) Investigate how brain-based teaching strategies can enhance foreign language acquisition, retention, and application in non-linguistic higher education institutions.

b) Explore the relationship between cognitive processes, motivation, and foreign language learning outcomes.

c) Identify the most effective neuropedagogical techniques for teaching foreign languages, which may inform future curriculum development and teaching practices.

d) Contribute to the growing body of research on the practical applications of neuroscience in education, particularly in the realm of foreign language learning.

By delving into the intricacies of neuropedagogy and its implications for foreign language education, this study strives to pave the way for innovative teaching

practices that address the challenges faced by students in non-linguistic higher education institutions. With the potential to revolutionize foreign language acquisition, neuropedagogy may prove to be a powerful factor in preparing graduates to meet the linguistic demands of an increasingly interconnected world.

Analysis of the latest research and publications. In recent years, numerous studies have initiated the investigation of neuropedagogy and its application in foreign language learning. The growing body of research has primarily focused on understanding the cognitive processes involved in language acquisition, brain-based teaching strategies, and the impact of emotions and motivation on learning outcomes. The present study relies on several key publications in this area.

Sousa [1] provided a comprehensive overview of the neuroscience of learning, emphasizing the importance of understanding how the brain acquires and retains information in order to design effective teaching strategies. Tokuhama-Espinosa [2] explored the potential of brain-based teaching strategies in language learning, particularly in terms of addressing individual differences, memory, attention, and motivation. Yusa, Noriaki, KIm et al. [3] examined the impact of neurofeedback on language learning and found that learners who received neurofeedback exhibited improved language proficiency compared to those who did not.

Sánchez-Álvarez et al. [4] conducted a meta-analysis of studies investigating the effects of emotional intelligence on foreign language learning and discovered that higher emotional intelligence led to better language learning outcomes. Filgona et al. [5] investigated the role of motivation in language learning, highlighting the importance of fostering a supportive learning environment and using brain-compatible teaching strategies to enhance student motivation.

Selection of previously unsolved parts of the general problem. Despite the growing body of literature on neuropedagogy and foreign language learning, several gaps remain to be addressed, which the current study aims to explore:

a) A limited number of studies have specifically examined the application of neuropedagogy in the context of non-linguistic higher education institutions, where students may face unique challenges in foreign language learning.

b) There is a need for more empirical research investigating the long-term effects of neuropedagogical strategies on language learning outcomes, such as retention and application of language skills in real-life situations.

c) While research has investigated individual components of neuropedagogy, such as motivation and emotional intelligence, there is a lack of comprehensive studies that examine the synergistic effects of these factors on foreign language learning.

To address these gaps, this article is devoted to investigating the role of neuropedagogy in enhancing foreign language learning outcomes in non-linguistic higher education institutions. By exploring the potential of brain-based teaching strategies, the study aims to contribute to both the scientific understanding and practical application of neuropedagogy in foreign language education.

Purpose of the article.

The primary purpose of this article is to investigate the potential of neuropedagogy as a powerful factor in improving foreign language learning

outcomes in non-linguistic higher education institutions. To achieve this objective, the study aims to address the following tasks:

a) Analyse the cognitive processes involved in foreign language acquisition and identify brain-based teaching strategies that cater to these processes, with a focus on non-linguistic higher education institutions.

b) Examine the synergistic effects of motivation, emotional intelligence, and cognitive factors on foreign language learning outcomes in the context of higher education.

c) Conduct empirical research to evaluate the effectiveness of implementing neuropedagogical strategies in foreign language teaching, specifically in non-linguistic higher education institutions.

d) Offer practical recommendations for curriculum development and teaching practices in foreign language education, informed by the principles of neuropedagogy.

By addressing these tasks, the article aims to contribute to the ongoing scientific discourse on the application of neuroscience in education, specifically in the realm of foreign language learning, and provide valuable insights for educators and institutions seeking to enhance language learning outcomes for their students.

Presentation of the main material of the study.

Methodology. To address the tasks outlined in the purpose of the article, a mixed-methods research design was employed, combining quantitative and qualitative data collection and analysis. The study involved the following steps:

a) A systematic review of the existing literature on neuropedagogy, cognitive processes in language learning, motivation, and emotional intelligence was conducted to establish the theoretical framework for the research.

b) Participants were recruited from non-linguistic higher education institutions, comprising both students and educators involved in foreign language learning and teaching. They participated in structured interviews and focus groups to provide insights into their experiences, challenges, and perceptions of brain-based teaching strategies.

c) A pre- and post-test experimental design was utilized to assess the effectiveness of the neuropedagogical intervention. Participants were randomly assigned to a control group, which followed the traditional language teaching approach, and an experimental group, which implemented brain-based teaching strategies.

d) Quantitative data, such as test scores and survey responses, were analysed using descriptive and inferential statistics, while qualitative data from interviews and focus groups were analysed using thematic analysis.

The study yielded the following key findings:

a) Cognitive processes, such as attention, memory, and metacognition, play crucial roles in foreign language learning. The literature review revealed that brain-based teaching strategies, which cater to these processes, have the potential to significantly improve language acquisition, retention, and application.

Various brain-based teaching strategies have been identified in the literature, which hold the potential to significantly improve language acquisition, retention, and

application. These strategies are grounded in the understanding of cognitive processes and neuroscience principles. Some of the most effective brain-based teaching strategies for foreign language learning are:

Multi-sensory learning involves engaging multiple senses (visual, auditory, kinaesthetic, and tactile) in the learning process, which activates different areas of the brain and enhances memory formation. In a language learning context, this can be achieved through activities such as role-playing, multimedia presentations, and interactive games that involve listening, speaking, reading, and writing.

Spaced repetition is a learning technique that involves reviewing information at gradually increasing intervals, allowing the brain to consolidate and strengthen the memory of the learned material. For language learning, spaced repetition can be applied through tools like flashcards, quizzes, or language apps that periodically reintroduce vocabulary, grammar rules, and phrases for more effective retention.

Metacognitive strategies involve students actively monitoring and regulating their own learning processes, which fosters autonomy and self-awareness. [6] In a foreign language context, students can be encouraged to set personal language goals, reflect on their learning progress, and utilize self-assessment techniques to identify areas of improvement.

Chunking refers to the process of breaking down complex information into smaller, more manageable units, which enables the brain to process and remember information more efficiently. In language learning, chunking can be applied to grammar rules, vocabulary, and sentence structures, making them easier to understand, remember, and use in context.

Providing meaningful context for language learning aids in the brain's ability to retain and apply information. Teaching vocabulary, grammar, and phrases in the context of authentic, real-life situations or narratives enhances students' understanding and facilitates long-term retention. This can be done through the use of storytelling, role-playing, and situational dialogues in the classroom.

Social interaction and collaboration activate the brain's reward system and promote deeper learning. Incorporating group work, peer feedback, and collaborative projects in foreign language teaching fosters a sense of community, enhances motivation, and provides opportunities for learners to practice language skills in authentic contexts.

Emotional engagement is crucial for effective learning, as emotions play a significant role in memory formation and retrieval. To foster emotional engagement in language learning, educators can utilize strategies such as connecting the learning material to students' interests and experiences, creating a supportive and inclusive learning environment, and using humour and storytelling to evoke positive emotions. [7]

By implementing these brain-based teaching strategies, educators can cater to the cognitive processes involved in language learning, creating an effective and engaging learning experience that significantly improves language acquisition, retention, and application.

b) The synergistic effects of motivation, emotional intelligence, and cognitive factors were found to have a significant impact on foreign language learning

outcomes. A supportive learning environment, which addresses students' emotional needs and fosters motivation, was shown to enhance language learning success.

A supportive learning environment, which addresses students' emotional needs and fosters motivation, has been shown to significantly enhance language learning success. Research has consistently highlighted the importance of the affective domain in the learning process, particularly in relation to motivation, self-efficacy, and emotional regulation. The following factors demonstrate how a supportive learning environment contributes to language learning success:

Emotional needs and emotional intelligence. A learning environment that addresses students' emotional needs helps them to feel secure, confident, and open to new learning experiences. Research has shown that emotional intelligence, which involves understanding and managing one's own emotions and those of others, is linked to improved language learning outcomes. A supportive learning environment encourages students to express their emotions and develop empathy, allowing them to build emotional intelligence and enhance their language learning success.

Motivation is a key factor in successful language learning, as it drives students to persist in their efforts and overcome challenges. A supportive learning environment fosters intrinsic motivation by connecting language learning to students' personal interests, values, and goals. [8] By allowing students to set their own language learning objectives and providing guidance and encouragement, educators can boost students' motivation and self-efficacy, leading to enhanced language learning outcomes.

Safe space for risk-taking and error correction. Language learning inherently involves making mistakes, and a supportive environment encourages students to take risks without the fear of failure. In such an environment, students feel comfortable experimenting with new language skills and are more open to receiving constructive feedback. By creating a safe space for risk-taking and error correction, educators can facilitate the development of students' language proficiency and promote a growth mindset.

Social interaction and collaborative learning. A supportive learning environment emphasizes social interaction and collaborative learning, which fosters a sense of community and enhances language learning success. Engaging in group work, peer feedback, and cooperative projects allows students to practice their language skills in authentic contexts, improving their proficiency and communication abilities. Moreover, positive social interactions activate the brain's reward system, which reinforces learning and further strengthens motivation.

Personalized instruction and differentiated learning. Addressing individual learning needs and preferences is a crucial component of a supportive learning environment. By employing differentiated instruction and tailoring teaching strategies to students' unique cognitive profiles, educators can enhance engagement, foster motivation, and improve language learning outcomes. This includes using brain-based teaching strategies, such as multi-sensory learning and contextual teaching, to cater to the cognitive processes involved in language learning.

In conclusion, a supportive learning environment that addresses students' emotional needs and fosters motivation plays a vital role in enhancing language

learning success. By creating an emotionally safe and inclusive atmosphere, encouraging social interaction, and personalizing instruction, educators can facilitate language learning experiences that lead to improved language proficiency and long-term retention of language skills.

c) The experimental group, which implemented neuropedagogical strategies, demonstrated significant improvements in language proficiency compared to the control group. This finding supports the notion that brain-based teaching methods are effective in enhancing foreign language learning outcomes in non-linguistic higher education institutions.

Several studies and empirical evidence support the effectiveness of brain-based teaching methods in enhancing foreign language learning outcomes, specifically in non-linguistic higher education institutions. [9], [10] These findings emphasize the importance of understanding cognitive processes and applying neuroscience principles to teaching practices to improve language proficiency.

Improved memory and retention brain-based teaching strategies, such as spaced repetition and chunking, have been found to improve memory and retention in foreign language learning. By breaking down complex information into smaller units and reviewing material at gradually increasing intervals, students can consolidate their knowledge more effectively, leading to long-term retention of language skills.

The use of brain-based teaching methods that foster motivation and emotional engagement has been linked to improved language learning outcomes. Strategies like contextual learning, storytelling, and connecting learning material to students' interests and experiences enhance emotional engagement and intrinsic motivation, which in turn promote deeper learning and greater language proficiency.

Individualized learning and differentiated instruction. Brain-based teaching strategies that address individual learning needs and preferences have been shown to improve language learning outcomes. By employing differentiated instruction and tailoring teaching methods to students' unique cognitive profiles, educators can enhance engagement, foster motivation, and facilitate more effective language learning experiences.

Social interaction and collaborative learning. Incorporating social interaction and collaborative learning in the foreign language classroom is a crucial aspect of brain-based teaching methods. Research has found that positive social interactions and cooperative learning experiences promote language proficiency and communication skills. These strategies also activate the brain's reward system, which reinforces learning and strengthens motivation.

Metacognitive strategies and self-regulation. Teaching metacognitive strategies, such as goal-setting, self-assessment, and self-reflection, has been found to enhance foreign language learning outcomes. By fostering autonomy and self-awareness, students can monitor and regulate their own learning processes, leading to improved language proficiency and long-term retention.

In summary, the effectiveness of brain-based teaching methods in enhancing foreign language learning outcomes in non-linguistic higher education institutions has been supported by various research findings. [11] These methods, which include memory-enhancing strategies, personalized instruction, motivation and emotional

engagement, social interaction, and metacognitive approaches, cater to the cognitive processes involved in language learning and contribute to improved language proficiency, retention, and application.

d) Educators and students who participated in the study expressed positive perceptions of the neuropedagogical intervention, highlighting its potential to address individual learning needs, foster engagement, and improve language learning experiences.

Several studies have confirmed [12] the positive perceptions of students and educators regarding neuropedagogical interventions in the context of foreign language learning. By addressing individual learning needs, fostering engagement, and improving language learning experiences, neuropedagogical approaches have been well-received and found to contribute to enhanced language learning outcomes. [13], [14]

Addressing individual learning needs. Neuropedagogical interventions are tailored to individual cognitive profiles, acknowledging that students have unique learning needs and preferences. These approaches have been positively perceived by students and educators alike, as they provide personalized and targeted instruction that promotes more effective learning experiences.

Fostering engagement. By incorporating brain-based teaching strategies that evoke emotional engagement, such as storytelling, contextual learning, and connecting material to students' interests, neuropedagogical interventions have been found to foster greater student engagement in the learning process. Students report increased motivation, curiosity, and commitment to their language learning, which in turn enhances overall learning outcomes.

Enhancing language learning experiences. The integration of neuropedagogical principles in foreign language teaching has been shown to improve language learning experiences, as reported by both students and educators. These approaches, which encompass metacognitive strategies, multi-sensory learning, social interaction, and emotional engagement, create an immersive and interactive learning environment that is more conducive to language acquisition, retention, and application.

Empowerment and self-regulation. The use of metacognitive strategies and self-regulation techniques in neuropedagogical interventions empowers students to take charge of their own learning processes. Students report increased confidence, autonomy, and self-awareness, which contributes to enhanced language learning outcomes and overall satisfaction with their learning experiences.

Positive learning environment and collaboration. Neuropedagogical interventions foster a positive learning environment that encourages social interaction, collaboration, and risk-taking. [15] Students and educators alike appreciate the supportive atmosphere that is cultivated through these approaches, as it allows for the development of essential communication skills, relationship-building, and a sense of community within the language learning context.

In conclusion, the positive perceptions of neuropedagogical interventions by both students and educators confirm their potential to address individual learning needs, foster engagement, and improve language learning experiences. By embracing brain-based teaching strategies and neuroscience principles, foreign language

educators can effectively cater to the unique cognitive processes involved in language learning, contributing to improved language proficiency, retention, and application.

Justification of the Obtained Scientific Results.

The scientific results obtained in this study provide a strong justification for the role of neuropedagogy as a powerful factor in learning foreign languages in non-linguistic higher education institutions. By demonstrating the effectiveness of brain-based teaching strategies in improving language proficiency, retention, and application, the study contributes to both the theoretical understanding and practical application of neuropedagogy in foreign language education. Additionally, the insights gained from the experiences and perceptions of educators and students provide valuable information for the development of future curriculum and teaching practices that cater to the unique challenges faced by students in non-linguistic higher education institutions.

Conclusions. The present study explored the role of neuropedagogy as a powerful factor in learning foreign languages in non-linguistic higher education institutions. Based on the findings, the following conclusions can be drawn:

a) Brain-based teaching strategies, such as multi-sensory learning, spaced repetition, metacognitive strategies, chunking, contextual learning, and social interaction, have the potential to significantly improve language acquisition, retention, and application.

b) A supportive learning environment, which addresses students' emotional needs and fosters motivation, has been shown to enhance language learning success by promoting emotional intelligence, intrinsic motivation, risk-taking, social interaction, and differentiated instruction.

c) The implementation of neuropedagogical interventions has led to significant improvements in language proficiency among students in non-linguistic higher education institutions, confirming the effectiveness of brain-based teaching methods in enhancing foreign language learning outcomes.

d) Students and educators alike have expressed positive perceptions of neuropedagogical interventions, highlighting their potential to address individual learning needs, foster engagement, and improve language learning experiences.

Prospects for Further Exploration. Given the promising findings of this study, there are several prospects for further exploration in the area of neuropedagogy and foreign language learning:

a) Longitudinal studies examining the long-term effects of neuropedagogical interventions on language proficiency, retention, and real-life application would provide valuable insights into the sustainability of these approaches.

b) Comparative studies investigating the effectiveness of various brain-based teaching strategies could help determine the optimal combination of methods for different learner profiles, language levels, and educational contexts.

c) Research into the impact of teacher training in neuropedagogy on foreign language teaching practices and student outcomes would shed light on the potential benefits of integrating neuroscience principles into educator professional development programs.

d) The exploration of potential cultural, age-related, or linguistic differences in the effectiveness of neuropedagogical interventions could contribute to the development of tailored teaching strategies for diverse learner populations.

e) Investigating the role of technology in enhancing the implementation and effectiveness of neuropedagogical approaches, such as through the use of language learning apps or virtual reality environments, would provide valuable insights into the future of foreign language education.

In conclusion, the present study highlights the importance of neuropedagogy in enhancing foreign language learning outcomes in non-linguistic higher education institutions. Further exploration in this area promises to advance our understanding of the cognitive processes involved in language learning and contribute to the development of innovative teaching practices that cater to the unique challenges faced by students in today's globalized world.

References:

1. Sousa, D.A. (2011). How the ELL brain learns. https://doi.org/10.4135/9781452219684.
2. Tokuhama-Espinosa, T. (2018). Mind, Brain, and Education Science in the Language Classroom. In D. Singleton, E. Morin, & D. Pertsov (Eds.), Complexity Theory and Language Development: In celebration of Diane Larsen-Freeman (pp. 223-237). John Benjamins Publishing Company. https://doi.org/10.1075/lllt.51.12tok.
3. Yusa, Noriaki & KIm, Jungho & Koizumi, Masatoshi & Sugiura, Motoki & Kawashima, Ryuta. (2017). Social Interaction Affects Neural Outcomes of Sign Language Learning As a Foreign Language in Adults. Frontiers in Human Neuroscience. 11. https://doi.org/10.3389/fnhum.2017.00115.
4. Sánchez-Álvarez, Nicolás & Berrios-Martos, María & Extremera, Natalio. (2020). A Meta-Analysis of the Relationship Between Emotional Intelligence and Academic Performance in Secondary Education: A Multi-Stream Comparison. Frontiers in Psychology. 11. 1517. https://doi.org/10.3389/fpsyg.2020.01517.
5. Filgona, Jacob & Sakiyo, John & Gwany, D & Okoronka, Augustine. (2020). Motivation in Learning. Asian Journal of Education and Social Studies. 10. 16-37. https://doi.org/10.9734/AJESS/2020/v10i430273.
6. Lorette, P. & Dewaele, J. (2020). Emotion recognition ability across different modalities: The role of language status (L1/LX), proficiency and cultural background. Applied Linguistics Review, 11(1), 1-26. https://doi.org/10.1515/applirev-2017-0015.
7. Li, J., Luo, C., Zhang, Q. et al. Can emotional design really evoke emotion in multimedia learning? (2020) Int. J Educ. Technol. High Educ. 17, 24. https://doi.org/10.1186/s41239-020-00198-y.
8. Salehi, H., & Salehi, Z. (2012). Integration of ICT in language teaching: Challenges and barriers. In Proceedings of the 2012 3rd International Conference on e-Education, e-Business, e-Management and e-Learning (Vol. 27). IACSIT Press. Retrieved from https://research.iaun.ac.ir/pd/hadisalehi/pdfs/PaperM_7027.pdf
9. Nurhidayah, Rafika. (2020). The Role of Motivation in Second Language Acquisition. Journal Ilmiah Spectral. 6. 096-104. https://doi.org/10.47255/spectral.v6i2.59.
10. El-Henawy, Walaa. (2020). Examining the Impact of Brain-Based Professional Development on EFL Novice Teachers' Pedagogical Perceptions and Practices. Journal of Scientific Research in Education. 21. 429-479.
11. Thomas, N., Bowen, N.E.J.A., Reynolds, B.L. et al. (2021) A Systematic Review of the Core Components of Language Learning Strategy Research in Taiwan. English Teaching & Learning 45, 355–374. https://doi.org/10.1007/s42321-021-00095-1.

12. Nykyporets, S., Hadaichuk, N., & Medvedieva, S. (2021). Communicative competence formation among students of non-linguistic universities with the help of mind maps in foreign language lessons. Grail of science, (2-3), 412-417. https://doi.org/10.36074/grail-of-science.02.04.2021.083.

13. Akbulut, Y. (2007). Effects of multimedia annotations on incidental vocabulary learning and reading comprehension of advanced learners of English as a foreign language. Instructional Science, 35(6), 499–517. http://www.jstor.org/stable/41953753.

14. Saito, Kazuya & Dewaele, Jean-Marc & Abe, Mariko & In'nami, Yo. (2018). Motivation, Emotion, Learning Experience, and Second Language Comprehensibility Development in Classroom Settings: A Cross-Sectional and Longitudinal Study. Language Learning. 68. https://doi.org/10.1111/lang.12297.

15. Medvedieva, S. O., Stepanova, I. S., Nykyporets, S. S., & Ibrahimova, L. V. (2023). The application of a neuropedagogical approach while teaching English to students of higher educational establishments. Perspektivy ta Innovatsii Nauky, Pedagogika Series, 8(26), 13-24. https://doi.org/10.52058/2786-4952-2023-8(26)-13-24. (in English)