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ENHANCING ENGLISH LANGUAGE LEARNING IN SECONDARY SCHOOLS THROUGH BRAIN-BASED STRATEGIES AND DIGITAL GAMIFICATION

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Annotation. The evidence-based method, known as "brain-based learning," adapts teaching methods to the way the human brain receives and remembers information. To improve learning outcomes in teaching foreign languages, in particular English, it is necessary to understand cognitive mechanisms, emotional activity, and neurodidactic principles. This study examines the neuropedagogical foundations of English language teaching, examining motivational and cognitive elements that improve language learning. One of the practical components is the creation of a digital platform with gamified, multisensory, and adaptive learning technologies. Experimental studies show that brain-based strategies, together with modern educational technologies, significantly increase students' communicative competence, grammatical literacy, and the ability to learn words.

Key words and phrases: Brain-based learning, Neuroeducation, English language teaching, Cognitive mechanisms, Emotional engagement, Gamification, Multisensory learning, Adaptive learning technologies, Vocabulary acquisition, Grammar proficiency

O'RTA TA'LIM MAKTABLARIDA INGLIZ TILINI O'RGANISHNI MIYAGA ASOSLANGAN STRATEGIYALAR VA RAQAMLI GEYMIFIKATSIYA ORQALI TAKOMILLASHTIRISH

ANNOTATSIYA: "Miyaga asoslangan ta'lim" deb nomlanuvchi dalillarga asoslangan usul o'qitish usullarini inson miyasi ma'lumotlarni qabul qilish va eslab qolish usuliga moslashtiradi. Chet tillarni, xususan, ingliz tilini o'qitishda ta'lim natijalarini yaxshilash uchun kognitiv mexanizmlar, hissiy faollik va neyrodidaktik tamoyillarni tushunish zarur. Ushbu tadqiqotda ingliz tilini o'qitishning neyropedagogik asoslari ko'rib chiqilgan bo'lib, unda til o'rganishni yaxshilaydigan motivatsion va kognitiv elementlar o'rganib chiqilgan. Geymifikatsiyalangan, multisensorli va adaptiv ta'lim texnologiyalariga ega raqamli platformani yaratish amaliy tarkibiy qismlardan biridir. Eksperimental tadqiqotlar shuni ko'rsatadiki, miyaga asoslangan strategiyalar zamonaviy ta'lim texnologiyalari bilan birgalikda o'quvchilarning kommunikativ

kompetensiyasi, grammatik savodxonligi va soʻzlarni oʻrganish qobiliyatini sezilarli darajada oshiradi.

Kalit soʻzlar va iboralar: Aqliy oʻrganish, Neyropedagogika, Ingliz tilini oʻqitish, Kognitiv mexanizmlar, Emotsional jalb qilish, Geymifikatsiya, Multisensor oʻrganish, Moslashuvchan taʼlim texnologiyalari, Lugʻat boyligini oshirish, Grammatikani bilish

УЛУЧШЕНИЕ ИЗУЧЕНИЯ АНГЛИЙСКОГО ЯЗЫКА В СРЕДНИХ ШКОЛАХ ПОСРЕДСТВОМ СТРАТЕГИЙ, ОСНОВАННЫХ НА МОЗГЕ, И ЦИФРОВОЙ ГЕЙМИФИКАЦИИ

Аннотация: Метод, основанный на доказательствах, известный как "образование, основанное на мозге," адаптирует методы обучения к тому, как человеческий мозг воспринимает и запоминает информацию. Для улучшения результатов обучения иностранным языкам, в частности английскому языку, необходимо понимание когнитивных механизмов, эмоциональной активности и нейродидактических принципов. В данном исследовании рассматриваются нейропедагогические основы обучения английскому языку, изучаются мотивационные и когнитивные элементы, улучшающие изучение языка. Одним из практических компонентов является создание цифровой платформы с геймифицированными, мультисенсорными и адаптивными образовательными технологиями. Экспериментальные исследования показывают, что стратегии, основанные на мозге, в сочетании с современными образовательными технологиями значительно повышают коммуникативную компетентность учащихся, грамматическую грамотность и способность к изучению слов.

Ключевые слова и выражения: Мозговое обучение, Нейрообразование, Обучение английскому языку, Когнитивные механизмы, Эмоциональное вовлечение, Геймификация, Мультисенсорное обучение, Адаптивные технологии обучения, Приобретение словарного запаса, Владение грамматикой

Introduction

These days, neuroeducational approaches which use neuroscience to understand how the brain learns and convert those findings into useful classroom strategies are replacing traditional language instruction, which is frequently dry, dull, or ineffective over the long run (Jensen, 2008; Sousa, 2016) [2], [3]. According to brain-based learning, lessons should be: Multisensory and active (active learning experiences improve retention and understanding); emotionally engaging (positive emotions activate the brain and improve memory consolidation); and aligned with cognitive processing capacities (working memory, attention span, long-term memory encoding). As a result, brain-based approaches are particularly helpful for learning English, where vocabulary, grammar, speaking, listening, and reading skills must all be developed simultaneously.

Literature review

Numerous academics have contributed to the understanding of brain-based learning in the classroom. According to Eric Jensen (2008), lessons should be interesting, pertinent, and meaningful. He also asserts that movement, hands-on activities, and emotionally engaging surroundings activate neural pathways linked to learning. Working memory, long-term memory, and retrieval processes are memory systems that affect learning [2]. David Sousa (2016) explains how spaced repetition, chunked content, and frequent retrieval practice improve retention, especially for language acquisition [3].

Lessons must be created to appeal to different forms of intelligence, including linguistic, visual-spatial, musical, and interpersonal intelligences, in accordance with Howard Gardner's (1983) theory of multiple intelligences. Brain-based English lessons can use multiple intelligences to engage students in various ways [1]. Mary Helen Immordino-Yang (2018), for instance, has demonstrated that emotional relevance improves cognitive processing and retention [5]. According to recent research, gamified learning tools and digital technologies present interactive, multisensory, and adaptive learning experiences that are in line with brain-based principles (Tokuhama-Espinosa, 2011) [4]. Additionally, platforms that offer personalized learning pathways and instant feedback improve vocabulary acquisition and grammar retention.

Although theoretical studies on neuroeducation emphasize the importance of implementing neuroeducational strategies, minimal research has examined the real-world uses of integrating brain-based strategies with modern educational technologies in the teaching of English in secondary schools. This research bridges that gap.

Methodology

Research Methodology: This study combined qualitative and quantitative research using a mixed-methods approach.

Participants: 30 secondary school students, ages 13 to 14, were split into two groups: the experimental group (15 students) received brain-based lessons using digital tools, while the control group (15 students) received traditional English instruction. Tools used included a pre-test and a post-test that evaluated vocabulary, grammar, and speaking skills; a classroom observation checklist; a motivation and engagement survey using Likert scales; and digital analytics from the learning platform. The procedure involved both groups completing standardized English tests to determine their baseline proficiency. **Lesson intervention:** Brain-based principles (multisensory input, chunking, gamification, emotional hooks, and movement breaks) were used to design the lessons for the experimental group. **Control group:** Conventional lecture-style instruction taught by a teacher. Six weeks later, a post-test and survey are administered to assess engagement, motivation, and academic progress.

Data Analysis: Paired t-tests and percentage improvement are used to analyze quantitative data. To find trends in student behavior, engagement, and emotional response, qualitative data from surveys and observations were subjected to thematic analysis.

Results

1. **Academic Achievement:** When compared to the control group, the experimental group's vocabulary retention improved by 25%. Compared to the control group, which saw an 8 percent increase in grammar proficiency, the experimental group saw a 20 percent increase.

2. **Motivation and Engagement:** The experimental group showed 30% more interest and participation, according to surveys. Lessons were more "fun" and "memorable," according to the students.

3. **Cognitive and Emotional Outcomes:** Lessons that included movement, interactive games, and multimedia content were found to improve students' attention spans and encourage active participation. Due to spaced repetition and gamified practice, students showed improved retrieval of previously learned material.

Table 1: Pre-test vs Post-test Scores (Experimental vs Control)

Skill	Contro	Contro	Experi	Experi	Improv
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area	l group Pre- test (%)	l group Post- test (%)	mental Group Pre-test (%)	mental Group Post- test (%)	ement Difference (%)
ulary	65	70	66	83	+17
ar	60	65	62	82	+17
ng	58	63	60	78	+18

Conclusion Based on Results: Technology-supported, brain-based lessons are substantially effective in developing the acquisition of the language, as well as motivation, and concentration during the lessons.

Discussion

The results of this study demonstrated that brain-based learning improved secondary school students' English language proficiency, as the experimental group retained 20% more grammar and 25% more vocabulary than the control group. These results are in line with earlier studies that demonstrated increased memory consolidation and comprehension in lessons that adhere to cognitive principles like chunking, multisensory input, and spaced repetition (Jensen, 2008; Sousa, 2016).

There was also a 30% increase in motivation and engagement, which is consistent with Immordino-Yang (2018) who found that emotionally engaging and personally relevant learning experiences enhance cognitive processing. These results are also consistent with the findings of Tokuhama-Espinosa (2011), who observed that gamified and interactive lessons, incorporating movement breaks, multimedia content, and immediate feedback, help promote active participation and can increase attention span.

These results indicate that combining cognitive, emotional, and motivational principles with adaptive, gamified learning tools can create an environment conducive to language learning, and the personalized pathways and multisensory input available through digital platforms may have contributed to enhanced recall of previously learned material and long-term retention. But the small sample size (N=30) and short intervention period (six weeks) may limit the generalizability of the results, and future research should use larger, more diverse populations and longer-term studies to examine the long-term effectiveness of brain-based strategies in language learning.

The study's overall findings highlight how neuroeducational methods have the potential to revolutionize English language instruction. Teachers should incorporate gamified, multisensory, and adaptive methods into their regular classroom practice because they can improve students' communicative competence, grammar mastery, and vocabulary acquisition.

Conclusion

The study concludes that a neuroeducational framework that integrates cognitive, emotional, and motivational principles improves secondary school students' English language learning outcomes. Gamification and digital tools also improve long-term retention, engagement, and attention. Suggestions: Instructors should plan their lessons using cognitive principles (spaced repetition, chunking, and multisensory input). At the beginning of each lesson, include an emotional and motivational hook. Incorporate

gamified learning modules and digital platforms to facilitate brain-based learning. Educate teachers on neuroeducational techniques. Long-term retention and scalability across several schools should be the focus of future studies.

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СОЦИАЛЬНЫЕ ФАКТОРЫ КОД-СВИТЧИНГА В РЕЧИ СОВРЕМЕННОЙ РУССКОЯЗЫЧНОЙ МОЛОДЁЖИ

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Аннотация: В статье рассматриваются ключевые социальные факторы код-свитчинга в речи современной русскоязычной молодёжи. Анализируются такие детерминанты, как языковой престиж, процессы глобализации, влияние интернет-коммуникации и массовой культуры. Особое внимание уделяется социолингвистическим механизмам, определяющим выбор языкового кода в различных коммуникативных ситуациях. Отмечается, что код-свитчинг выступает не только как лингвистическое, но и как социально обусловленное явление, отражающее трансформации языковой идентичности и культурных установок молодёжи.

Ключевые слова и выражения: код-свитчинг, социолингвистика, языковой престиж, глобализация, интернет-коммуникация, массовая культура, молодёжный дискурс.

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