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FOSTERING STUDENTS COGNITIVE SKILLS THROUGH THE USE OF ARTIFICIAL INTELLIGENCE IN FOREIGN LANGUAGE EDUCATION

Abstract

This article describes the implementation of modern artificial intelligence (AI) technology for establishing accommodations for foreign language education, on assistance in transcending cognitive boundaries. This is a carefully crafted book on AI tools and approaches that facilitate personalized learning through active engagement that aids in the formation of critical-thinking skills also. Through a case study and empirical evidence based study this research, it shows that AI can help with the process of language acquisition through acquisition stage facilitation as well as in comprehension and retention. The findings suggest that AI in that sense not only can improve language development, but also can promote cognitive skills essential for survival in any technological society. The analysis seeks to draw recommendations for educators on how/what AI tools employed in the foreign language curricula can be best deployed in order to best achieve cognitive enrichment. It shows how AI tooling, when applied properly, may facilitate language and memory during acquisitions as well as in learning foreign languages.

Keywords: *cognitive skills, artificial intelligence, online tools, digital education, metacognition*

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ШЕТЕЛ ТІЛІН ОҚЫТУДА ЖАСАНДЫ ИНТЕЛЛЕКТ АРҚЫЛЫ ОҚУШЫЛАРДЫҢ КОГНИТИВТІК ДАҒДЫЛАРЫН ДАМУ

Аңдатпа

Бұл мақалада шетел тілін оқытуда заманауи жасанды интеллект (ЖИ) технологияларын қолдану арқылы когнитивтік кедергілерді еңсеруге мүмкіндік беретін жағдайларды қалыптастыру қарастырылады. Мақалада белсенді қатысуға негізделген дараландырылған оқытуды қамтамасыз ететін ЖИ құралдары мен тәсілдері сипатталады. Бұл зерттеу мысалдық және эмпирикалық деректерге сүйене отырып, ЖИ тіл үйрену процесінде түсіну мен есте сақтау кезеңдерінде тиімді бола алатынын көрсетеді. Зерттеу нәтижелері ЖИ тек тілдік дағдыларды дамытуға ғана емес, сонымен қатар қазіргі технологиялық қоғамда өмір сүруге қажетті когнитивтік қабілеттерді арттыруға ықпал ететінін дәлелдейді. Сондай-ақ шетел тілін оқыту бағдарламаларына ЖИ құралдарын тиімді енгізу бойынша мұғалімдерге ұсыныстар беріледі.

Кілт сөздер: *когнитивтік дағдылар, жасанды интеллект, онлайн құралдар, цифрлық білім беру, метакогниция.*

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РАЗВИТИЕ КОГНИТИВНЫХ НАВЫКОВ УЧАЩИХСЯ С ПОМОЩЬЮ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ОБУЧЕНИИ ИНОСТРАННЫМ ЯЗЫКАМ

Аннотация

В данной статье рассматривается применение современных технологий искусственного интеллекта (ИИ) для создания условий, способствующих обучению иностранным языкам, а также для преодоления когнитивных барьеров. Работа подробно описывает инструменты и методы ИИ, которые обеспечивают персонализированное обучение через активное вовлечение учащихся, содействуя развитию критического мышления. На основе кейс-стади и эмпирических данных исследование показывает, что ИИ может способствовать процессу овладения языком на этапе восприятия, понимания и запоминания материала. Результаты исследования демонстрируют, что использование ИИ не только повышает эффективность овладения иностранным языком, но и развивает когнитивные навыки, необходимые для жизни в технологически развитом обществе. В заключении даны рекомендации для преподавателей по выбору и применению инструментов ИИ в учебных программах по иностранным языкам с целью максимального развития когнитивных способностей учащихся.

***Ключевые слова:** когнитивные навыки, искусственный интеллект, онлайн-инструменты, цифровое образование, обучение иностранным языкам*

Introduction

Revolutionizing the Landscape of Education: The world of education can hardly be seen to have a more permanent time when technology moves into the 21st century. However, one of the most game-changing dynamics of that evolution is a revolution in artificial intelligence (AI). As educational providers go to try and equip students for life in a wide, global world AI is the vehicle of learning now as it improves the cognition ability and better helps learners through individual experiences/training that provides a richer understanding of another language. With social media, multicultural communities around the world and the Internet, multilingual fluency has become a universal need. Being exposed to new languages is a major stepping stone to great adventure on many fronts, and it can also increase your employment prospects when faced with a competitive market in which you are constantly facing new alternatives. The most effective foreign language instruction method is not the standard one-size-fits-all and conventional practices may still be insufficiently applicable for individual learners with individual needs and learning styles. Here AI is really unique with its incredible possibilities to customize the learning at the hands of individual learners for specific requirements of every student. This means that this device can interpret and analyze millions of data points and is then able to associate patterns between specific student behaviors, the performance or engagement. In AI learning environments, teachers create spaces that alter on the fly in response to students what they need (or need not) in each of these environments; therefore, it makes it possible that people have access to material that needs attention right now. And AI-powered tools also allow teachers to provide immediate feedback and get students to correct their errors as they practice. Such a quick reward also engenders learning and gives a boost to a sense of accomplishment, which really stimulates motivation among learners. In addition, AI promotes learning by developing cognition through active and critical thinking. Students are motivated to engage with language actively and not just receiving passively, and with a plurality of interactive platforms. This process helps students build skills to extract information from the information and the capacity to analyze and synthesize the pieces that were

key components of second language. We can, yet some hurdles to the integration of AI in teaching foreign languages. Despite these advances, the productivity potential of these technologies is still enormous; such barriers as data protectionist attitudes, access and lack of staff training necessitate a new perspective in order we can make the most of our potential. However, the thought that AI could help with thinking and learning languages and make language development much better and even more fun indeed is most intriguing. The purpose of this article is to examine the integration of AI technologies into language teaching and to examine how such integration can raise student cognitive ability through the process of cognitive development, which in foreign languages may be beneficial for teaching foreign proficiency. The blog series will be a review of the different ways AI applications for language education currently stand, their current advantages and disadvantages to teachers using them, and what lies ahead for this area of work. Educators should also understand how to make certain their students become multilingual and culturally competent in an AI-powered world if they are to succeed.

Coping with Cognitive Abilities in Language learning

Cognitive abilities refer to mental skills that we require in order to acquire information and apply our knowledge. It is what I see as a few of the main skills we need in terms of learning, specifically language:

Memory: The storage and keeping of words, grammar rules, or syntax.

Tunes in: Listening to spoken or written language, and taking it in ().

On the list of top skills include language problem-solving -- or the ability to deal with idiomatic expressions or part context.

Critical thinking — the skill of making sense of, analyzing, interpreting and synthesizing language with intent. Understanding.

Metacognition: Not only this, know how we learn but also consider our learning ways and so controlling our studying in this manner.

Language Learning is built on learning these cognitive processes. However, traditional methods of teaching, such as rote memorizing and practice, do not offer the required higher order thinking skills and do little to motivate the learners. Now, this is where AI can be the game changer.

AI Technologies in Language Education

And also there are also many other types of these tools called AI. A few key ones are:

Natural Language Processing (NLP): NLP helps the computers to comprehend natural language, interpreting or generating human speech. In language learning, this might facilitate immediate feedback on correct grammar, selection of words and pronunciation.

Machine Learning (ML): By studying pupil performance data, ML algorithms help create personalized learning experiences. ML is able to make language engaging for students, through it differentiating by learning styles and learning paces.

Chatbots and Virtual Assistants: They make talking less of a “lilted or rehearsed conversation” in the target language and more interactive—for example, virtual assistance. These tools can give students the illusion to read and write from a voice, listening to and hearing the language (at their speed).

This comprises the Intelligent Tutoring Systems (ITS) —which use AI platforms to conduct individualized tutorials, questions and feedback for better retention of knowledge addressing gap areas relating to concepts through instructional content.

Speech Recognition Technology: This technology offers five activities which allow students to receive immediate feedback regarding their oral language production to exercise and strengthen pronunciation and speaking skills.

So we concluded what AI in language learning applications can do for you: gamify learning and interactive environments: Gamified L2 acquisition Mobile Applications have one of the most popular features already often found inside their gamified L2 acquisition Apps.

AI for Cognitive Boosting

A glance at the foreign language education when AI system has been introduced in foreign language teaching this makes impact on skills (Faris-Imadi & EL Kamel 2020:109)

We will need a differentiated learning environment. Perhaps the most important advantage of AI is its customization of the personalization aspects to individual students. Classroom needs that cater to diverse learners in a traditional setting don't match up. Through AI tools to determine student information — not just test scores, but also engagement states, and preferences for learning — it can create completely personalized learning journeys.

Example: A student suffering from poor memory could do spaced repetition exercises while another senior-level grammar learner can see himself facing more complicated types of sentence structures. We give them a stimulating feeling of incentive and we are able to offset the cognitive part of the matter that was necessary to respond to specific problems presented by each student as well.

Feedback + Immediate Correction: You'll use AI powered tools to immediately tell which language is wrong, so students can see that they're making mistakes and fix them. From a cognitive perspective, this immediacy is so important as it offers learners the opportunity to practice and automate grammar and vocabulary correctly (rules, vocabulary) • avoiding consolidating bad habits or error patterns. Example: For example, a language learning app by using NLP might find your writing and tell you how to make it better, while others can simply ignore it. Because student reflection must raise awareness for mistakes in structure, metacognition is stimulated and language has been improved.

Promoting Active Learning.

AI tools connect user and content that helps them to put their thought in the material, while surface storage merely gets repeated. Interactive exercises, simulations and speaking in a conversational tone with chatbots teach students what it would take to be able to think critically about whatever knowledge is built up, in real life, applications.

Example: Through AI, students can converse with native speakers or learners in another language (like themselves) through a virtual language exchange course, which not only promotes language acquisition; it enables the learners to hone their critical thinking and problem-solving skills as they navigate cultural subtleties in those interactions while also mastering conversational dynamics.

Promoting Making and Talking. It is not just a matter of acquiring vocabulary and grammar, but also promoting critical thinking and problem-solving skills. For instance, to create an environment for collaborative learning with students working together on their language problem: Using AI tool enables. This collaboration fosters social cognition skills, such as communication, negotiation, and perspective taking.

Example: AI-based platforms enable learners around the world to communicate with one another, discuss projects, and even argue. Cognitively and aesthetically demanding interplay is part of what allows for cognitive flexibility (i.e. a person to see the world from another person's perspective), which can also carry into learning a new language.

Enhancing Memory Retention. Spaced repetition or adaptive learning and methods like spaced repetition and adaptive learning can be used by AI to promote or enhance the recollection of information for better recall, according to AI. AI reinforces learning and avoids forgetting by presenting learning by making the information at/over time.

Example: Spaced repetition also allows language learning apps such as the above that allow language applications help language learning applications to provide word checks and grammar concepts to serve up the vocabulary and grammar concept reviews at exactly just in time to students just before they have chance to forget the basics right before forgetting them and reinforce them or as well as enhance the recall of information.

Cultural Awareness Development. A language is not simply to be learned grammatically or with vocabulary; it is also understand about the culture of that language. They can involve immersive, simulated cultural contexts that provide students with a contextually-based and contextualized set of experiences which facilitate cognitive processing and concrete understandings of policies through AI technologies in terms of language.

Example: The AI boasts curating content that encompasses cultural nuances, idioms or even societal norms specific for the target language. By engaging with these materials, students gradually learn critical skills that enable them to tell the difference between cultures.

AI For Teaching Languages — the challenges in implementing. Though there are many benefits to integrating AI, there nonetheless are several challenges facing AI in the foreign language education field:

Access and Equity. Unchecked, there could be even more disparity in language education caused by unequal access to AI. However, in under-resourced environments, students may lack the tools and infrastructure that allow them to experience AI-driven learning experiences. Since information that is collected is personal data, only allowing the proper data to be seen by the right people is a great way to shelter both students and schools from the fallout of being breached. They do not want students and schools to get out of the conversation for these data, as they do not only have to be protected, but educational institutions become responsible for protecting others from data for a reasonable time. We need to raise the bar higher and demand a similar level of education, training and preparation (that is, for how best to integrate AI tools into their present teaching). Due to the smell of skepticism about the use of this technology, not all teachers in educational institutions could easily use AI technology and teachers might prefer old fashioned way of doing things. But they argue that this incline can be eradicated by highlighting the practical benefits of cognitive AI in this domain. Yet, students could be under threat of overly relying on using AI and become over reliant on these technologies which could damage their cognitive performance. Technology integrated and normal way of doing things should be matched for an effective method of intervention. The View: AI in the near future for foreign language education. However, the future of AI in foreign language education remains bright as the technology keeps getting better.

Trend and Expectation

The following trends and possibilities can be set out. AI will improve and get better detecting how each individual learns, which can translate into more personalized educational experiences. In future AI systems, deep learning algorithms might work automatically to predict student needs and adjust their pace accordingly; For example, rather than monitoring test scores, it monitors performance measures (for instance, how long a student spent on an exercise or what error type they made).

Discussion

AI systems might design custom-prepared curricula for individual students, drilling areas of practice such as using flashcards to drill on frequently misused vocabulary or long passage listening exercises using specific accents and dialects. Better personalization can even take motivational roles. This helps it in getting insight on students' engagement, therefore it can recommend specific activities or content which relates to students' interests and hence increases their intrinsic motivation making it an enjoyment that leads to learning.

The combination of artificial and virtual/augmented reality (AI, VR/AR) may be used to create language learning contexts similar to what happens in a classroom. Such an example could be students stepping into virtual worlds — where there is a bustling marketplace, café or historical place — to interact and practice their language as context dictates. With additional language learning, and contextually-relevant cultural sensitivity, it is highly interesting. AR apps could also feature language learning prompts overlaying with real-life scenarios.

For AI, it is very helpful because the human teachers are still essential part of learning languages. That might be through combining AI tools with teachers with the teacher teaching them, so the teacher is able to guide and mentor students while also presenting personalised content via AI-based insights allow teachers to identify the trends in larger groups and adapt classroom activities on the basis of common experiences to build groups or collective skills.

Educators may also be able to offer the ‘valuing of critical thinking and creativity’ (two skills which to be honest AI cannot deliver). Through debates and group projects, teachers can help students be sensitive to the subtleties of language and culture.

Meanwhile, for example, perhaps AI in language education will also make its start at offering soft skills courses; such as communication, empathy, and cultural awareness. AI could do big help with that by helping amplify our collisions of different sets of learners to develop some of those better. Likewise, AI applications will allow his students to speak with native speakers, or other learners, of varying cultural backgrounds. These exchanges replicate authentic conversations and provide students with more confidence and fluency to pick up social cues and cultural clues. In addition to this, AI can also provide virtual feedback regarding whether one can be considered appealing in tone or voice and body language when conversing with other human-to-human. This may help guiding students of meaningful communication skills, important attributes for academic and professional communication in the future.

As AI in foreign language education looks in the future, there will also be interfaces for constant assessment and feedback. Many old ways of testing rely on testing at various times that might not provide an accurate evaluation of how capable the students are of grasping the content. AI enables live assessments that gauge how students are doing and provide immediate feedback. This kind of continuous grading, as opposed to traditional grading practices, will allow students to regularly assess their own readiness and modify the manner in which they are learning. AI can determine what in-depth analysis can help, based on that data that includes academic progress, and suggest further resources or alternative study styles.

AI tools need to be usable by students with disabilities or no high-tech tools. The three ways to create user-friendly interfaces, having offline access to resources and addressing multiple learning requirements.

Finally, the endless access to the tailor-made types of resources means that students can have personalised learning whenever they wish from any place and any point of time depending on their existing experience – something that is a huge plus.

Conclusion.

This makes a fascinating methodological tool of AI for foreign language education that has cognitive development opportunities. Also, AI can also help develop important skills, including visual memory or attention in specific context through providing individualized learning with immediate feedback and adequate coaching (Hsiao et al.). Yet the promise also brings its own pitfalls based on questions of access and privacy, as well as a broader need for professional learning opportunities for educators. AI technologies will need to be developed in tandem with human educators in this era to create effective language learning environments. This dual focus will elevate language education and better prepare for a multilingual world, also having its cognitive benefits that are expected to help in attaining success. Without a doubt, Artificial Intelligence (AI) is to be the future of foreign language teaching, and it will greatly enrich the learning experience of students.

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