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ARTIFICIAL INTELLIGENCE-DRIVEN MOBILE-ASSISTED LANGUAGE LEARNING: DEVELOPING A PERSONALIZED LEARNING MODEL FOR UZBEK EFL STUDENTS

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Annotation: This article examines the integration of artificial intelligence (AI) and Mobile-Assisted Language Learning (MALL) in English language education. It aims to develop a personalized learning model for Uzbek students studying English as a Foreign Language (EFL). The study analyses the pedagogical foundations of AI-supported mobile learning, learner autonomy, adaptive instruction, and intelligent feedback. A five-component conceptual model is proposed, incorporating learner profiling, personalized content delivery, AI-supported language practice, continuous assessment, and adaptive feedback.

Keywords: artificial intelligence, mobile-assisted language learning, personalized learning, EFL students, adaptive learning, learner autonomy, digital

INTRODUCTION

The rapid development of artificial intelligence (AI) and mobile technologies has significantly transformed foreign language education, creating new opportunities for personalized and flexible learning. In higher education, English proficiency has become increasingly important for academic mobility, international communication, scientific research, and professional development. Consequently, universities in Uzbekistan face the challenge of implementing innovative educational approaches that respond to students' diverse linguistic needs and digital learning preferences.

Mobile-Assisted Language Learning (MALL) has emerged as an effective approach to supporting language acquisition beyond traditional classroom environments. Mobile applications enable students to practise vocabulary, grammar, listening, speaking, and writing through accessible digital resources. Furthermore, the integration of AI technologies introduces adaptive learning mechanisms, intelligent feedback, automated assessment, and individualized educational content.

Despite these advantages, the effective integration of AI into mobile language learning remains a pedagogical challenge. Differences in students' English proficiency, digital literacy, learning motivation, and independent learning abilities require a structured and context-sensitive educational framework. Existing approaches often emphasize technological functionality without sufficiently addressing the relationship between personalization, learner autonomy, and teacher guidance.

METHODOLOGY AND LITERATURE REVIEW

The present study employs a qualitative theoretical-analytical research design to develop a personalized AI-driven Mobile-Assisted Language Learning model for Uzbek EFL students. The methodological framework combines theoretical literature analysis, comparative analysis, pedagogical synthesis, and conceptual modelling.

The theoretical analysis examines scientific publications related to mobile-assisted language learning, artificial intelligence in education, personalized instruction, adaptive learning, and learner

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autonomy. Particular attention is given to identifying the pedagogical principles that can support the integration of AI technologies into university-level English language instruction.

The comparative analysis investigates the educational functions of different categories of AI-supported mobile applications. These include AI chatbots, speech recognition systems, automated writing assistants, adaptive vocabulary applications, and digital assessment platforms. The technologies are examined according to their personalization capabilities, accessibility, feedback mechanisms, opportunities for language practice, and relevance to individual learning objectives.

Pedagogical synthesis is used to integrate the identified theoretical principles and technological opportunities into a coherent instructional framework. This process establishes relationships between students' initial proficiency levels, personalized learning materials, AI-supported practice, continuous assessment, and adaptive feedback.

The theoretical foundations of Artificial Intelligence-Driven Mobile-Assisted Language Learning (AI-driven MALL) have been examined by numerous international researchers investigating mobile technologies, personalized instruction, learner autonomy, and artificial intelligence in foreign language education.

One of the important contributions to the development of Mobile-Assisted Language Learning was made by Agnes Kukulska-Hulme and Lesley Shield in their study entitled “An Overview of Mobile Assisted Language Learning: From Content Delivery to Supported Collaboration and Interaction” [1]. The authors emphasize that mobile technologies should not be regarded merely as instruments for delivering educational content but as platforms that facilitate communication, collaboration, and interaction. Their research provides an important theoretical foundation for understanding the transition from traditional technology-supported instruction to interactive mobile learning environments.

Similarly, Glenn Stockwell, in his article “Using Mobile Phones for Vocabulary Activities: Examining the Effect of the Platform” [2], investigates the role of mobile devices in vocabulary learning. His research highlights the importance of technological accessibility and the relationship between learning activities and the characteristics of mobile platforms. These findings are particularly relevant to developing mobile-based language learning environments that accommodate students' individual needs.

The concept of learner autonomy is comprehensively discussed by Phil Benson in his book “Teaching and Researching Autonomy in Language Learning”[3]. Benson considers learners' ability to take responsibility for their educational activities as an essential element of successful language acquisition. This theoretical perspective is particularly significant for AI-supported mobile learning because personalized applications enable students to establish individual objectives, monitor their progress, and regulate their learning activities.

More recently, Chung Kwan Lo, Philip Leung Ho Yu, Simin Xu, Davy Tsz Kit Ng, and Morris Siu-yung Jong , in their systematic review entitled “Exploring the Application of ChatGPT in ESL/EFL Education and Related Research Issues: A Systematic Review of Empirical Studies”, examine the educational applications of ChatGPT in English language teaching. Their research identifies opportunities for supporting language practice, writing development, feedback, and individualized learning. At the same time, the authors draw attention to methodological and pedagogical challenges associated with the integration of generative AI into language education [4].

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In particular, Marjona Xislatjon qizi Zokirova , in her article “The Impact of Mobile Applications on Independent English Learning in Uzbek Universities”, examines the influence of mobile applications on independent English language learning among university students [5]. The study considers applications such as Duolingo, Memrise, BBC Learning English, and Quizlet, focusing on vocabulary acquisition, listening comprehension, grammar development, and learner autonomy.

Ma'mura Klichboy qizi Melibayeva, in her article “The Impact of Mobile-Assisted Language Learning (MALL) on Vocabulary Acquisition in Uzbek EFL Classrooms”, investigates the application of Quizlet, Memrise, Anki, and Duolingo in vocabulary development. The author examines the relationship between mobile-assisted learning activities and students' lexical acquisition. The study is relevant to the present research because vocabulary development represents one of the essential dimensions of personalized language learning [6].

RESULTS AND DISCUSSION

The theoretical analysis of artificial intelligence and Mobile-Assisted Language Learning demonstrates that their integration creates opportunities for developing more flexible, individualized, and learner-centred approaches to English language education. The reviewed literature indicates that mobile technologies facilitate continuous access to educational resources, while artificial intelligence provides mechanisms for analysing learner performance, generating feedback, and adapting instructional content. The combination of these capabilities establishes a pedagogical foundation for personalized language learning.

One of the principal findings of the study is that effective personalization requires more than simply providing students with access to AI-powered applications. It requires a systematic instructional framework in which diagnostic assessment, learning objectives, educational content, language practice, and feedback are interconnected. Based on this finding, the study proposes a five-component model specifically designed for Uzbek students learning English as a Foreign Language [7].

The first component, learner profiling, focuses on identifying students' initial language proficiency, educational needs, strengths, and learning difficulties. Diagnostic assessment provides information about students' listening, speaking, reading, and writing abilities. Additional indicators, such as vocabulary knowledge, grammatical accuracy, pronunciation, and digital literacy, can also be incorporated. This information establishes the basis for developing individual learning pathways.

The second component, personalized content delivery, involves selecting educational materials according to learners' proficiency levels and individual objectives. AI-supported systems can recommend exercises, vocabulary activities, grammatical explanations, and reading materials based on students' previous performance. This approach provides opportunities for differentiated instruction and reduces the limitations associated with uniform learning activities.

The third component, AI-supported language practice, focuses on developing practical communication skills through intelligent mobile applications. AI chatbots can facilitate simulated conversations, speech recognition systems can support pronunciation practice, and writing assistants can provide linguistic feedback. These technological functions enable students to practise English outside conventional classroom environments and receive additional opportunities for language production.

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The fourth component, continuous assessment, establishes mechanisms for monitoring students' progress. Learning analytics can provide information about completed activities, recurring errors, vocabulary retention, and individual learning patterns. Such information can help both students and teachers identify areas requiring additional attention [8].

The fifth component, adaptive feedback, connects assessment results with subsequent instructional activities. When students demonstrate difficulties in a particular language area, the system can recommend additional explanations and exercises. Consequently, learning activities become responsive to students' changing educational needs.

The proposed model has particular relevance to the educational environment of Uzbekistan. University students demonstrate different levels of English proficiency, digital competence, learning motivation, and experience with independent learning. Therefore, implementing identical learning activities for all students may not adequately address their individual educational requirements. An important characteristic of Uzbek EFL education is its multilingual environment. Students' knowledge of Uzbek and Russian may influence their acquisition of English vocabulary, grammatical structures, pronunciation, and sentence construction. AI-supported mobile applications can provide additional explanations and contextual examples addressing common linguistic difficulties [9]. For example, students experiencing difficulties with English articles, prepositions, or tense formation may receive targeted grammatical exercises. Learners with limited speaking confidence may participate in AI-supported conversational activities before engaging in classroom discussions. Similarly, students who require additional vocabulary development may use personalized exercises based on spaced repetition principles.

CONCLUSION

The present study has examined the pedagogical potential of integrating artificial intelligence into Mobile-Assisted Language Learning and proposed a personalized learning model for Uzbek students studying English as a Foreign Language. The theoretical findings demonstrate that combining AI technologies with mobile learning environments can establish more flexible, individualized, and learner-centred approaches to foreign language education.

The principal scientific outcome of the research is the development of a five-component conceptual model consisting of learner profiling, personalized content delivery, AI-supported language practice, continuous assessment, and adaptive feedback. The integration of these components provides a systematic framework for addressing students' individual linguistic needs, learning difficulties, and educational objectives.

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