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METHODOLOGY FOR DEVELOPING LINGUISTIC COMPETENCE BASED ON VIRTUAL AND AUGMENTED REALITY

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Abstract
. This article analyzes the use of virtual reality (VR) and augmented reality (AR) technologies in the language learning process from the perspective of developing linguistic competence. VR and AR create an interactive, immersive, and context-rich environment for students, which helps effectively enhance vocabulary, speaking skills, and listening comprehension. The study examines pedagogical strategies, technological approaches, and contemporary practices.

Keywords: Linguistic competence, virtual reality, augmented reality, language learning, interactive teaching, immersive education, digital pedagogy.

Introduction

Аннотация
В данной статье анализируется использование технологий виртуальной реальности (VR) и дополненной реальности (AR) в процессе обучения языкам с точки зрения методики развития лингвистической компетенции. VR и AR создают для студентов интерактивную, иммерсивную и контекстно насыщенную среду, что способствует эффективному расширению словарного запаса, развитию речевых навыков и умений аудирования. В исследовании рассматриваются педагогические стратегии, технологические подходы и современные практики.

Ключевые слова: лингвистическая компетенция, виртуальная реальность, дополненная реальность, изучение языка, интерактивное обучение, иммерсивное образование, цифровая педагогика.

Annotatsiya
Ushbu maqola virtual reallik (VR) va kengaytirilgan reallik (AR) texnologiyalarini til o'qitish jarayonida lingvistik kompetensiyani rivojlantirish metodikasi nuqtai nazaridan tahlil qiladi. VR va AR talabalar uchun interaktiv, immersiv va kontekstga boy muhit yaratadi, bu esa so'z boyligi, nutq va tinglab tushunish ko'nikmalarini samarali oshirishga yordam beradi. Tadqiqotda pedagogik strategiyalar, texnologik yondashuvlar va zamonaviy amaliyotlar o'rganiladi.

Kalit so‘zlar: Lingvistik kompetensiya, virtual reallik, kengaytirilgan reallik, til o‘rganish, interaktiv o‘qitish, immersiv ta’lim, raqamli pedagogika

Introduction

Linguistic competence refers to the ability to use a language effectively for communicative purposes. Traditional classroom methods are often limited in their capacity to engage learners in context-rich, interactive, and practice-oriented environments. In contrast, virtual and augmented reality technologies create immersive settings that closely resemble real-life situations, enabling learners to use language in a more natural and meaningful way. Virtual Reality (VR) generates a fully simulated environment, such as virtual cities or classroom scenarios, where learners can interact, communicate, and complete tasks. Augmented Reality (AR), on the other hand, enhances the real-world environment by overlaying digital elements onto it.

Recent studies indicate that the integration of VR and AR significantly enhances the effectiveness of language instruction, increases learner motivation, and fosters deeper development of linguistic competence. These technologies serve as innovative pedagogical tools that allow students to engage with language in authentic contexts. VR enables learners to navigate simulated environments—such as streets, shops, hotels, or classrooms—where they actively participate in communication and task-based activities. Meanwhile, AR encourages interaction with real-world objects enriched by digital content. For instance, through AR applications, students can label classroom objects, perform grammar exercises using 3D models, and expand their vocabulary within meaningful contextual settings.

Contemporary research demonstrates that VR and AR technologies offer a range of pedagogical advantages in language teaching, including increased learner motivation, more effective language acquisition, and the deepening of vocabulary and speaking skills. Moreover, engagement in VR and AR environments enables students to enhance their intercultural competence, make decisions in realistic situations, and develop social communication skills.

In addition, technological innovations make language learning more interactive and engaging, encourage active participation, and reduce passive involvement in the classroom. Therefore, the integration of VR and AR is regarded as a modern and effective pedagogical strategy for the development of linguistic competence.

Methods

This study was conducted through a combination of literature analysis, pedagogical observation, and practical experimentation. The methodology includes the following components:

- **Virtual and AR simulations:** Students experienced real-life scenarios within VR environments, such as shopping in a market, booking a hotel, and asking for directions.
- **AR-based interactive exercises:** Learners were assigned tasks to identify and use vocabulary related to objects in the classroom or real-world settings through AR applications.
- **Practical role-plays and task-based activities:** Students worked collaboratively in groups, using the target language while solving problems and completing communicative tasks.

- **Assessment tools:** Evaluation included speech recordings in VR environments, analysis of pronunciation and grammar, as well as situational tests and interactive exercises conducted through AR platforms.

Participants and Procedure. The participants of the study consisted of 50 students from higher education institutions. Throughout the intervention, their vocabulary range, speaking ability, and listening comprehension skills were systematically measured and evaluated. Traditional teaching methods are often limited in their ability to engage learners in context-rich, immersive, and interactive environments, which makes the effective development of speaking and listening skills more challenging. For this reason, Virtual Reality (VR) and Augmented Reality (AR) technologies have gained significance as innovative pedagogical tools for enhancing linguistic competence.

VR creates fully immersive virtual environments in which students can navigate simulated contexts such as city streets, shops, hotels, or classrooms, perform interactive tasks, and participate in dialogues. In contrast, AR integrates digital elements into the real-world environment, enabling learners to interact with real objects, complete interactive exercises, and develop vocabulary within meaningful contexts. These technologies not only increase learner motivation but also strengthen practical language skills and contribute to the development of intercultural competence.

The research methodology incorporates several pedagogical and technological approaches. Primarily, within VR environments, students engage in simulations that closely resemble real-life situations—for example, shopping at a market, making hotel reservations, or asking for directions. During these activities, learners use newly acquired vocabulary in natural contexts while improving their grammar and pronunciation skills. Additionally, through AR technologies, students complete interactive exercises using classroom objects, 3D models, or mobile applications. This approach enhances their retention, contextual understanding, and ability to apply language in situational contexts.

Results:

- In VR environments, students demonstrated effective improvement in speaking and listening comprehension skills. For example, during the market shopping simulation, learners successfully used new vocabulary through interactive dialogues.
- AR-based exercises significantly enhanced students' vocabulary acquisition and contextual understanding. Object-related tasks contributed to improved memory retention and communicative competence.
- Group tasks and role-play activities strengthened students' collaborative communication skills and their ability to solve problems through interaction in the target language.
- The findings of the study indicate that VR and AR technologies significantly enhance linguistic competence by increasing learners' motivation, engagement, and self-confidence.

The impact of VR and AR on the development of linguistic competence was clearly observed during the research process. Students who participated in VR-based practical activities demonstrated notable improvement in their speaking and listening comprehension skills. For instance, in VR simulations such as market interactions, hotel check-ins, and asking for

directions, learners were able to use newly acquired vocabulary appropriately within context, while also strengthening their grammar and pronunciation skills.

Similarly, AR-based exercises provided learners with interactive tasks involving classroom and real-world objects. These activities contributed to an expansion of vocabulary, improved situational understanding, and enhanced communicative competence. Overall, the integration of VR and AR created a more engaging and effective learning environment that fostered active participation and greater learner confidence in language use.

Group role-plays and task-based activities significantly developed students' collaboration, problem-solving, and spontaneous communication skills. For instance, student groups completed shopping and travel-related tasks in virtual environments by constructing dialogues, engaging in interaction, and using language in a more natural and accurate manner. In addition, VR environments provided opportunities for repetition and speech recording, allowing learners to identify errors and engage in self-correction and independent practice. AR tools, on the other hand, enhanced learners' situational understanding by linking vocabulary and expressions with real-world objects.

According to the research findings, VR and AR technologies not only facilitate the development of practical language skills but also actively engage students in learning, interactive tasks, and communication. At the same time, these technologies increase learner motivation, strengthen self-confidence, and provide opportunities for experiential learning through language use. The results showed a significant improvement in students' vocabulary range, a reduction in grammatical and pronunciation errors, greater fluency and accuracy in speech, and enhanced listening comprehension skills.

Furthermore, working in VR and AR environments contributed to the development of learners' intercultural competence. Through virtual excursions, cultural events, and interactive simulations, students experienced authentic cultural situations, which in turn improved their communicative awareness and practical language use in real-life contexts. In this way, VR and AR technologies enabled the simultaneous development of all key components of linguistic competence, including vocabulary, speaking, listening comprehension, communication skills, and cultural competence.

Discussion

The study indicates that VR and AR technologies not only enhance linguistic knowledge but also significantly strengthen students' motivation, interest, and cognitive engagement. Immersive learning environments help learners build confidence in experimenting with the language, taking communicative risks, and engaging in meaningful interaction. At the same time, certain challenges such as technological limitations, insufficient teacher training, and unequal access to technology may hinder effective implementation. This highlights the importance of pedagogical planning and technological support in the integration of VR and AR into language education.

The findings further demonstrate that VR and AR technologies are not only effective tools for developing linguistic competence but also powerful means of engaging students in active learning, interactive tasks, and communication. Working in virtual environments provides learners with authentic experiences of language use in real-life situations, enabling them to

identify errors, practice repeatedly, and strengthen their speaking skills. Meanwhile, AR technologies facilitate interactive tasks involving real-world objects, which enhances contextual understanding, vocabulary acquisition, and situational communication skills.

A key observation during the research process is that VR and AR technologies increase students' motivation, strengthen their self-confidence, and provide opportunities for experiential learning through language use. Learners become more willing to communicate in immersive environments and begin to use speech more naturally and fluently. Furthermore, these technologies contribute to the development of intercultural competence. Through virtual excursions, interactive cultural events, and simulations, students experience a variety of cultural situations, which enhances their readiness for real-life communication.

At the same time, several limitations were identified in the implementation of VR and AR technologies. These include limited technological resources and equipment, the varying level of teachers' competence in using VR and AR tools, and issues related to ensuring equal access for all students. Therefore, effective integration of these technologies requires careful instructional planning, the selection of tasks aligned with learning objectives, and a balanced combination of traditional teaching methods with modern digital approaches.

Conclusion and Recommendations

Virtual and Augmented Reality technologies are effective tools for developing linguistic competence in language teaching. These technologies create immersive, interactive, and culturally enriched environments that support the development of vocabulary, speaking, and listening comprehension skills.

The results of the study show that VR and AR technologies serve as efficient instruments for enhancing linguistic competence. In virtual and augmented environments, students' vocabulary range, speaking proficiency, and listening comprehension skills improve significantly. In addition, their intercultural competence is developed, and their readiness for real-life communication is strengthened. At the same time, learners' motivation increases as they actively participate in interactive and immersive situations, gaining opportunities to practice the language and correct their mistakes through experience.

Overall, the use of VR and AR technologies makes the language learning process more engaging, interactive, and effective compared to traditional teaching methods.

It is recommended that language teachers develop a well-structured pedagogical plan in advance when integrating VR and AR technologies into the learning process. Tasks should be carefully selected in accordance with clear learning objectives, and technological tools should be effectively aligned with classroom activities.

In addition, it is important to support students in using these technologies, encourage both individual and collaborative work, and create opportunities for learners to review and analyze their own speech. Such practices help students reflect on their language use and improve their communicative performance.

For future development, it is suggested to design new interactive teaching methodologies based on VR and AR technologies, further deepen cultural and communicative competence, and expand technological capabilities in language education. In this way, the integration of VR and

AR can be effectively utilized as a strategic tool for the development of linguistic competence in language teaching.

Recommendations:

- Integrate VR and AR activities into lesson planning to ensure systematic use of immersive technologies in language teaching.
- Continuously develop students' linguistic skills through both individual and group-based tasks.
- Improve teachers' professional competence by organizing training sessions on the effective use of VR and AR technologies.
- Select technological tools in accordance with learners' needs, abilities, and specific learning objectives.
- Combine VR and AR approaches with traditional teaching methods to achieve a balanced and effective instructional process.

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