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Research on the Design and Application of English Situational Teaching Based on VR Technology

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Abstract: This paper explores the integration pathways between VR technology and situational English teaching, examining their practical value and implementation methods. Traditional English teaching models suffer from issues like insufficient situational authenticity and passive learner engagement. Leveraging its immersive and highly interactive features, VR technology effectively addresses these limitations. The study identifies four core principles for VR-based situational English teaching design—targeted approaches and authentic scenarios—while optimizing five key processes, including instructional goal analysis and scenario design. It also establishes four application models for daily communication and cross-cultural contexts, along with safeguard measures such as hardware investment and teacher training. The application of VR technology enhances teaching methodologies, stimulates learning initiative, and improves learners' language proficiency and cross-cultural competence. Current challenges include high resource development costs and incomplete evaluation systems. Future research should deepen integration between technology and pedagogy to support English teaching reform.

Keywords: VR technology; Situational English teaching; Design; Application methods

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1. Introduction

As the global lingua franca, English education should prioritize developing learners 'practical language skills rather than merely memorizing vocabulary or mastering grammar. Traditional teaching models predominantly rely on classroom lectures, where teachers dominate instruction through textbooks and courseware while learners passively absorb knowledge. This approach lacks authentic language application scenarios, making it difficult for students to translate acquired knowledge into real-world communication abilities, often resulting in issues like "mute English" and "high scores with low practical skills." With the rapid advancement of information technology, virtual reality (VR) technology has emerged as a game-changer in education. Its immersive experiences, strong interactivity, and high-level scenario replication have revolutionized English contextual teaching. VR technology creates highly realistic language environments that transcend time and space constraints, immersing learners in simulated English settings and encouraging active participation in communication activities to enhance language proficiency. While educational institutions increasingly

focus on integrating VR with subject teaching and related research continues to grow, there remain gaps in the systematic design of VR-based contextual teaching and practical implementation methods. This study explores the design and application of VR technology in English contextual teaching, combining pedagogical principles with VR's unique characteristics to develop scientifically sound teaching strategies and practical pathways. The findings aim to provide actionable references for improving English teaching quality and fostering learners' core language competencies.

2. Significance of VR-based English situational teaching design

2.1. Breaking the limitations of traditional teaching and optimizing English teaching model

Traditional English situational teaching faces limitations in teaching resources and physical conditions. Teachers often create scenarios through virtual imagination, image displays, or simple role-playing, which lack authenticity and fail to engage learners. VR technology addresses this gap by enabling educators to design immersive English scenarios that mirror real-life environments, workplace dynamics, and cross-cultural interactions, such as airport check-ins, hotel check-ins, business negotiations, and overseas campus life. When learners wear VR devices, they can fully experience the environment and character interactions, transitioning from passive observers to active participants. This immersive teaching model breaks free from the spatial constraints of traditional classrooms, allowing learners to intuitively grasp language usage contexts through simulated real-life scenarios. It transcends the abstract limitations of textbook knowledge and effectively optimizes the presentation and implementation of English teaching.

2.2. Stimulating learning initiative and enhancing language application skills

Interest serves as the core driving force in learning. The immersive scenarios created by VR technology can significantly boost learners' enthusiasm for English acquisition. Unlike traditional teaching methods that rely on passive knowledge absorption, VR-based contextualized English instruction empowers learners with greater autonomy. They can freely explore and actively engage within these scenarios according to their learning pace and needs, such as conversing with virtual characters or completing situational tasks. During interactive processes, learners must flexibly apply acquired English vocabulary and grammar to solve practical problems. This "learning by doing" approach strengthens knowledge retention while enhancing language proficiency and flexibility. Additionally, VR scenarios feature real-time feedback systems that provide instant evaluations and guidance on linguistic accuracy and communication logic. This helps learners promptly identify and improve their weaknesses, gradually improving their comprehensive language application skills in listening, speaking, reading, and writing.

2.3. Cultivating cross-cultural communication competence to align with core teaching objectives

English education should not only impart linguistic knowledge but also cultivate learners' intercultural communication competence, helping them understand language habits, thought patterns, and behavioral norms across different cultural contexts. Traditional English teaching often relies on textbook case studies for cross-cultural knowledge transmission, making it difficult for learners to deeply experience the linguistic variations caused by cultural differences. VR technology can recreate cultural scenarios from various countries and regions, immersing learners in authentic cross-cultural environments to experience diverse communication styles. For instance, learners can experience Western holiday celebrations, business etiquette, and daily communication language patterns through VR scenarios, gaining an intuitive understanding of differences between Chinese and English in sentence structures, tone usage, and cultural metaphors. This immersive experience helps learners develop intercultural awareness, master communication skills, and better adapt to global communication demands, aligning with the core objectives of English education.

2.4. Promoting teaching innovation and reform to enrich educational resources

The integration of VR technology with contextualized English teaching represents not only an innovation in pedagogical

methods but also a breakthrough from traditional educational paradigms. This convergence transforms teachers from mere knowledge transmitters into scenario designers, activity facilitators, and instructional organizers, driving continuous enhancement of their IT application skills and instructional design capabilities. Meanwhile, the development and application of VR-based English teaching resources have enriched educational resource libraries, addressing the limitations of conventional teaching materials that were often monotonous and rigid. VR teaching resources can be flexibly adapted and updated according to instructional needs, catering to learners at different academic stages and proficiency levels to achieve personalized instruction. Furthermore, VR technology provides new research perspectives for English education, encouraging educators to explore the integration of information technology with subject teaching, thereby advancing the ongoing reform of English education.

3. Design and application of English situational teaching based on VR technology

3.1. Clarifying teaching design principles to establish the foundation

Instructional design serves as the cornerstone of VR technology in situational English teaching, guided by four fundamental principles: relevance, authenticity, interactivity, and practicality. The relevance principle requires educators to craft VR scenarios that align with teaching objectives, content, learners' age groups, and English proficiency levels, ensuring seamless integration with instructional content. For instance, middle school students might engage with simple scenarios like greeting routines, shopping, or asking directions, while college English majors could explore complex contexts such as business negotiations, academic exchanges, or cross-cultural interviews. Authenticity demands that VR environments closely mirror real-life language usage, with realistic settings, natural dialogues, and logical interactions that minimize the virtual-real gap, enabling learners to quickly immerse themselves. Interactivity emphasizes interactive features like voice chat with virtual characters, dialogue editing, and task completion, enhancing learner engagement. Practicality focuses on delivering tangible outcomes, ensuring VR scenarios effectively reinforce language knowledge and improve application skills—avoiding excessive emphasis on technical effects at the expense of core teaching objectives.

3.2. Optimizing the teaching design process and standardizing teaching implementation

The design of VR-based situational English teaching requires a scientific process to ensure orderly implementation, consisting of five key stages: teaching objective analysis, VR scenario design, teaching resource preparation, instructional activity organization, and teaching evaluation feedback. As the foundational step, teachers should align with curriculum standards and syllabi to define clear knowledge objectives, skill objectives, and competency goals for each lesson—such as mastering specific vocabulary and grammar, enhancing listening and speaking communication skills, and cultivating intercultural awareness—providing a basis for VR scenario design and activity planning. During the VR scenario design phase, educators should collaborate with technical experts to develop or select appropriate VR teaching resources, specifying scenario themes, spatial layouts, interactive tasks, and virtual character configurations while reserving flexibility for unexpected teaching scenarios. In the teaching resource preparation stage, teachers must pre-test VR equipment to ensure operational readiness and prepare supporting materials like scenario task sheets, vocabulary lists, and grammar explanation courseware to facilitate VR-based situational teaching. In the instructional setup phase, teachers should first demonstrate VR device operation and core teaching scenarios to help learners quickly adapt. Once immersed in the VR environment, educators must monitor learners 'progress in real time, provide immediate guidance for challenges, and encourage active participation. After the immersive experience, group discussions are organized to share insights and address issues, reinforcing learning outcomes. During the evaluation phase, teachers should assess learners' knowledge acquisition, skill development, and engagement levels using real-time VR system data alongside classroom performance and discussion results. Additionally, feedback on VR scenario design and teaching implementation should be collected to inform future instructional improvements.

3.3. Innovating teaching application models to enhance educational outcomes

By integrating diverse content and stage-specific characteristics in English teaching, we can develop diversified VR-based situational teaching models to maximize educational outcomes. The first model, the Daily Communication Scenario Approach, is tailored for foundational listening and speaking instruction. Teachers utilize VR technology to recreate real-life interactions—such as restaurant ordering, hospital visits, and train ticket purchases—allowing learners to practice common sentence structures and expressions within immersive environments. Learners can engage in real-time dialogues with virtual characters, while the system provides instant corrections for pronunciation and grammar errors, helping them refine language expression and enhance listening and speaking skills. The second model, the Cross-Cultural Scenario Approach, is designed for intermediate and advanced English teaching. Teachers employ VR to recreate cultural settings from various countries, including Western weddings, festive celebrations, and business events, enabling learners to experience language habits and communication etiquette across different cultural contexts. Through role-playing in these scenarios, learners participate in cross-cultural communication activities, gaining a deeper understanding of how cultural differences influence language expression and developing intercultural communication skills. The third model, the Professional Scenario Approach, is suitable for vocational English or specialized English instruction. Teachers design targeted VR scenarios based on professional needs, such as contract negotiations in business English, processing foreign trade correspondence, tour guide services and scenic spot explanations in tourism English, and doctor-patient communication and medical record writing in medical English. Learners apply professional English knowledge to solve practical problems in these scenarios, improving their vocational English application skills and laying a foundation for future career development. The fourth model, the Self-Directed Inquiry Approach, is designed for post-class extended learning. Teachers provide a wealth of VR-based English teaching resources, allowing learners to choose scenarios according to their interests and needs—such as watching VR English films, participating in role-playing activities, or completing extension tasks—to achieve personalized self-directed learning and compensate for the limitations of classroom instruction.

Figure 1. Application of VR in classroom teaching.

3.4. Strengthening teaching support measures to facilitate instructional implementation

The effective application of VR technology in contextualized English teaching requires comprehensive instructional support measures. Firstly, schools should increase investment in hardware infrastructure by equipping sufficient VR devices (including VR headsets, controllers, and consoles) and establishing dedicated VR teaching laboratories to provide

hardware support. Simultaneously, they should introduce high-quality VR-based English teaching resources or collaborate with technical experts to develop customized VR content tailored to their educational needs, thereby enriching the teaching resource library. Secondly, enhancing teacher development is crucial to improving educators 'IT application skills and VR instructional design capabilities. Schools can organize specialized training sessions, teaching research activities, and external learning programs to help teachers systematically master VR device operation, resource development techniques, and contextualized teaching design approaches, thereby elevating their overall teaching proficiency. Thirdly, establishing a robust teaching evaluation system is essential to transcend traditional single-dimensional assessment models. A combination of formative and summative evaluations should be adopted. Formative evaluations should focus on learners' engagement, interactive performance, and knowledge application within VR scenarios, while summative evaluations should incorporate unit tests and skill assessments to comprehensively evaluate learning outcomes. Finally, prioritizing learner feedback is vital. Teachers should regularly collect feedback on VR teaching experiences and promptly address issues related to instructional scenario design, equipment usage, and teaching organization to enhance teaching quality.

4. Conclusion

VR technology presents groundbreaking opportunities for situational English teaching. Its immersive and interactive features effectively overcome traditional teaching limitations, optimize instructional models, stimulate learners' initiative, enhance language proficiency and intercultural communication competence, and drive the advancement of English education reform. This study explores VR applications in situational English teaching through two core dimensions: instructional design significance and methodology. It clarifies principles, processes, and application models for instructional design, proposes corresponding teaching support measures, and provides practical references for English teaching practices.

It is important to note that the application of VR technology in English contextualized teaching remains in a stage of continuous exploration and refinement. Practical implementation still faces numerous challenges, such as high costs in developing VR teaching resources, insufficient IT capabilities among some teachers, and an underdeveloped teaching evaluation system. In the future, educators need to further strengthen research on integrating VR technology with English teaching, continuously optimize teaching design plans, and enhance the quality of teaching resources. Schools should increase investments in software and hardware, strengthen teacher team development, improve teaching support systems, and promote the widespread application and deep integration of VR technology in English education. At the same time, it is essential to adhere to a teaching-centered approach, avoid over-reliance on technology, and achieve the fundamental goal of technology serving teaching. This will enable VR technology to truly become a powerful tool for improving English teaching quality and cultivating high-quality language talents, injecting new vitality into the development of English education.

Disclosure statement

The author declares no conflict of interest.

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