

## RESEARCH ON THE INFLUENCE OF VIRTUAL REALITY TECHNOLOGY AND GIS TEACHING REFORM ON GEOGRAPHY STUDENTS' COGNITIVE IMPAIRMENT

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**Background:** Clinically, cognitive impairment is a transitional state between normal people and early Alzheimer's disease. Cognitive impairment refers to the abnormal phenomenon in the process of acquiring and recognizing knowledge, which will lead to serious learning and memory impairment, accompanied by the pathological process of disability, agnosia, disuse and so on. Cognitive impairment is caused by the obstacles in executive ability, visual space, language, memory, orientation and other cognitive fields. The main causes of the disease are education, diet, living habits and so on. The behavioral characteristics of cognitive function are mainly manifested in the changes of executive ability, attention, language ability and social cognition. For social cognitive ability, it is mainly manifested in anxiety in social communication, weakening of emotional control ability, decline of resonance ability and reduction of recognition of social clues. For attention, it is mainly manifested in the reduction of information processing speed, selectivity and other types of attention changes. For the executive ability, it is mainly manifested in the decline of organization and decision-making ability and the inability to complete complex tasks. For language ability, it is mainly manifested in grammatical errors, ignoring social etiquette, the phenomenon of words failing to express their meaning in communication with people, and problems in abstract language expression and understanding. With the continuous maturity of virtual reality technology, the teaching reform of virtual reality technology and geographic information system has become a topic discussed by current researchers, and its effect on students' cognitive impairment has also been demonstrated by most scholars.

This paper studies and analyzes a teaching reform strategy combining virtual reality technology and GIS, which is shown as follows. First, design a virtual reality assisted teaching system for the "new curriculum standard" of geography in senior high school. Teachers experience the virtual reality Dream Teacher products in advance, and give valuable suggestions based on many years of teaching experience. Second, through field observation, video images, case study and other forms, let students have the ability of geographical practice, break through the spatial constraints, and realize the field investigation in the virtual environment. Third, teachers let students feel the modeling utilization, space-time diversity, learning process, teaching in fun, multi sensibility, immersion and interaction presented by the combination of virtual reality and GIS teaching. Through the three-dimensional spatial learning environment, students can not only stimulate their enthusiasm for learning geography, but also simulate the objective environment to realize the high integration of actual learning situations, so that students can feel, hear get a new learning experience in visual and other sensory aspects, that is, learn geography in an immersive geographical environment.

**Objective:** To explore the effect of combining virtual reality technology and GIS teaching reform strategy on geography students' cognitive impairment, in order to improve students' cognitive impairment.

**Subjects and methods:** Geography students with different degrees of cognitive impairment are selected as the research object. Through the analysis of representative clustering (cure) algorithm and excel statistical software, this paper analyzes the effect of a combination of virtual reality technology and GIS teaching reform strategy on students with cognitive impairment. Combining virtual reality technology and geographic information system, the teaching reform strategy includes three strategies, which use strategy 1-3 respectively, and the number of relevant people is 50. The evaluation content includes four aspects: language ability, attention, memory ability and memory ability. Evaluate the improvement degree of the research results. The improvement level is divided into three levels: obvious improvement, improvement and no improvement. The improvement rate is the ratio of the number of people in the two levels of obvious improvement and improvement to the total number of people.

**Results:** Table 1 refers to the impact of the combination of virtual reality technology and GIS teaching reform strategy on the cognitive impairment of geography students. It can be seen from Table 1 that the combination of virtual reality technology and GIS teaching reform strategy has a high improvement rate on the four aspects of geography students' language ability, attention, memory ability and memory ability. This shows that the teaching reform strategy combined with virtual reality technology and GIS can be improved to the greatest extent.

**Conclusions:** GIS teaching combined with virtual reality technology provides a new way for front-line teachers' curriculum teaching, which promotes the innovative development of basic education. The teaching reform strategy combining virtual reality technology and geographic information system needs expert guidance and school enterprise alliance, so as to realize formal innovation and truly realize the win-win situation between teachers and students.

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**Table 1.** The influence of combining virtual reality technology and GIS teaching reform strategy on geography students’ cognitive impairment

Attribute	Language ability	Attention	Memory ability	Recall ability
Very improved	18	20	19	22
Improve	21	21	20	19
No improvement	11	9	11	9

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## EXPLORATION ON THE TEACHING REFORM PATH OF VOCAL MUSIC COURSE IN COLLEGES AND UNIVERSITIES FROM THE PERSPECTIVE OF EDUCATIONAL PSYCHOLOGY

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**Background:** Educational psychology is an important part of psychological research. It is a psychological theory put forward under the background of teaching reform. It has important theoretical and practical significance in promoting the reform of education system. Educational psychology applies psychological theory to education to improve teaching methods, improve students’ learning enthusiasm and help students solve various problems in the process of learning and growth. In addition, educational psychology is also of great significance to the improvement of educators’ psychological quality and teaching methods. Educational psychology contains many related theories, including psychological content, students’ psychological change law in the learning process, teachers’ analysis and cultivation of students’ learning motivation, teachers’ transfer and promotion of students’ learning, teachers’ analysis of students’ cognitive ability development, teachers’ cultivation of students’ cognitive understanding, students’ memory development, students’ knowledge consolidation methods, students’ cognitive strategy formation Cultivate students’ problem-solving ability and innovation ability, cultivate students’ correct self-consciousness, students’ group psychology and students’ mental health education. Educational psychology has important applications in teaching design, teaching mode improvement, promoting students’ learning motivation and helping students overcome psychological problems. Through educational psychology, teachers can have a deeper understanding of students, improve the pertinence of teaching, adjust teaching methods and teaching methods, and improve teaching quality.

With the development of society, the demand for college talents is not only professional talents, but also the comprehensive quality of students in different industries. Therefore, a large number of colleges and universities began to make teaching reform according to the development of students’ comprehensive quality. In college teaching, vocal music teaching is gradually favored by students. As an important subject in music major, vocal music teaching can greatly improve students’ comprehensive quality. However, with the development of society, the psychological needs of young college students have changed significantly, and the current vocal music teaching is facing great challenges. Traditional vocal music teaching aims at students’ vocal music ability to formulate teaching plans, and takes improving students’ vocal music ability as the main teaching goal. However, traditional teaching methods are difficult to meet students’ psychological needs, which leads to the lack of significant improvement of vocal music teaching quality. In order to improve the quality of vocal music teaching and promote the cultivation of students’ psychological quality in vocal music teaching courses, this paper studies the use of educational psychology to formulate the teaching reform plan of vocal music courses in colleges and universities, in order to provide reference for the teaching reform in colleges and universities.

**Objective:** This paper analyzes the current situation of the application of educational psychology in colleges and universities, analyzes the current situation and differences of students’ psychology in the teaching of vocal music courses in colleges and universities, evaluates the impact of educational psychology on the teaching reform of vocal music courses in colleges and universities, and puts forward the reform plan