

Design of Computer Aided Platform for Nursing Professional Training under the Background of Interactive and Experiential Model

ZHAO Xue*

Shandong College Of Traditional
Chinese Medicine
Yantai, Shandong, China, 264199

CHU Yuhua

Shandong College Of Traditional
Chinese Medicine
Yantai, Shandong, China, 264199

YANG Daojie

Shandong College Of Traditional
Chinese Medicine
Yantai, Shandong, China, 264199

CUI Yamin

Shandong College of Traditional Chinese Medicine
Yantai, Shandong, China, 264199

LIU Lei

The Affiliated Hospital of Qingdao University
Qingdao, Shandong, China, 266000

Abstract:Based on the questionnaire survey method and the SWOT analysis method, the advantages and disadvantages of the application of AR technology in nursing training are analyzed, and the possible application scenarios of AR technology in nursing training teaching and countermeasures to meet the challenges are proposed. CAI application research has been carried out in the teaching of nursing procedures, and the interactive "nursing medical record writing training system" CAI courseware has been developed. The courseware is composed of 9 functional modules. It has the advantages of convenient use, good interactivity, strong test performance, and flexible expansion. It allows students to collect nursing information, make diagnoses, and make nursing plans through man-machine dialogue. It solves the difficult teaching problems that are difficult to solve by traditional teaching methods.

Keywords: Computer Aided Platform, Nursing Professional Training, Interactive, Experiential Model

1. INTRODUCTION

Surgical nursing is a highly practical subject. Surgical nursing training is a main way for nursing students to master surgical nursing operation techniques. Traditional surgical nursing training adopts the teaching method of student observation, teacher demonstration [1], and nursing students' operation training. This method neglects the cultivation of nursing students' comprehensive nursing ability, which makes the nursing students have poor hands-on ability after entering the clinic and it is difficult to adapt to the nursing work [2]. Therefore, how to improve the teaching quality of surgical nursing training and enhance the practical operation and application ability of nursing students in an environment restricted by many factors such as practical training teaching conditions, equipment, funds [3], etc., is a very important topic [4].

The application of computer networks in the age of technology and information has penetrated into all aspects of social education [5], school education, family education, and management, and has gradually formed a modern education subject [6]. Computer multimedia-assisted teaching as an educational aid is being applied to the teaching of various medical subjects [7]. In the process. The operating room is a theoretical and practical work department that requires nursing staff to have a solid theoretical foundation and a high level of expertise to continuously meet the needs of nursing development under the new situation [8]. Combining operating room nursing teaching practice with can play an incomparable advantage in operating room nursing rounds. The research results of our hospital are reported as follows [9]. Computer-aided instruction (CAI) is a brand-new teaching form that uses computer technology to teach [10]. It

can comprehensively use a variety of media to effectively express teaching content that is difficult to express by traditional teaching methods, stimulate students' interest in learning, and improve teaching quality [11]. Since 1995, we have carried out CAI application research in the teaching of nursing procedures, and developed an interactive "nursing medical record writing training system [12]" (hereinafter referred to as the system) CAI courseware, which enables students to master the working methods of nursing procedures through man-machine dialogue [13]. In the past, the problems of theoretical understanding, method mastering, practical operation, performance [14] evaluation and other problems existed in the teaching, which were welcomed by students and praised by experts [15].

The network teaching platform is a brand-new learning environment based on modern computer networks. It can carry out interactive [16], synchronous and asynchronous teaching activities with learners by transmitting digital education information [17]. Compared with traditional education, the online teaching platform has the advantages of sharing educational information resources, unlimited time and space of activities [18], and convenient learning and communication. Geriatric nursing has been listed as a compulsory course by many college nursing majors in recent years. Because it involves multiple disciplines [19], there are many contradictions in teaching content and less class hours, focusing on practicality and systematic lack of theoretical knowledge for teachers and students to refer to the lack of teaching reference books and teaching reference materials affects the teaching effect [20]. The West Hospital of the First Affiliated Hospital of Guangxi Medical University is a tertiary class a general hospital, and computer operations are popular. Organize 24 nurses with the titles of junior nurses and above

in the undergraduate room [21], including 7 with junior titles, 12 with intermediate titles, and 5 with senior titles. After communication [22], they knew the purpose of the experiment and agreed to participate in the experiment. According to the technical title, the subjects were divided into three levels: junior high school and senior high school [23]. Then, according to the principle of stratified sampling, the subjects were randomly divided into observation group and control group [24].

From October 2015 to April 2016, a 6-month training course. The rapid development of computer technology, image recognition technology, sensor technology, simulation technology, etc., and the increasing popularity of smart devices have greatly enriched the forms of teaching. As an emerging technology, augmented reality technology (Augmented Reality, or AR technology) can provide a wealth of information entities on the basis of the real environment, and at the same time support full interaction with users, so that it has a broad field of education and teaching. prospect. In this article, through the analysis of the advantages and disadvantages of AR technology in the process of practical training and teaching.

2. THE PROPOSED METHODOLOGY

2.1 The Interactive and Experiential Model

In order to prevent the "overfitting" phenomenon in the BP network training and learning process and the established BP network model to have good robustness and predictability, the sample data set needs to be divided into a training set (Training Set) and a testing set (Testing Set) Two parts.

Since the data units of each sample collected by the BP network are inconsistent, it is necessary to normalize the original data of the training sample set to eliminate the influence of dimensions, which can speed up the convergence of the training network, accelerate the network learning speed, and ensure the established model It has sufficient sensitivity and good fit to the sample. In this paper, the training sample set data and the test sample set data are normalized by [0, 1], and the function mapminmax is used. The default mapminmax range is [-1, 1], which requires [0, 1] normalization. The formula is: BP network structure is composed of an input layer, an output layer and at least one hidden layer. Increasing the number of hidden layers can reduce network errors and improve accuracy, but it will also complicate the network and lead to training time. Too long and "over-fitting" phenomenon occurs. For a 3-layer BP network with a hidden layer, as long as the number of neurons in the hidden layer is large enough, any continuous function on a bounded area can be approximated with arbitrary accuracy.

Applying knowledge of cognitive psychology can allow designers to scientifically carry out industrial design work and ensure that industrial design products have humane characteristics. Designers should ensure that product design elements have identifiable characteristics, allowing users to clearly operate positions and operating methods, and at the same time receive effective feedback on operating behaviors. Designers should ensure that the design of industrial products has the characteristics of simple structure, so that the operation behavior is efficient and concise. In specific applications, designers need to effectively combine interactive design with advanced science and technology, such as the emergence of electric pressure cookers. The goal of cooking automation can be achieved. Designers need to ensure that the user's cognitive structure and product operation information

are highly consistent, and should analyze the behavior and living habits of industrial product users, such as college girls, expectant mothers, male workers, etc., to ensure that product design information is available Be accurately communicated. Designers also need to fully combine memory information and external information to allow users to effectively improve the efficiency of using products. For example, keyboard keys can allow users to achieve efficient work. Finally, designers need to ensure that the operation and display have a high degree of compatibility in interactive design applications.

2.2 The Nursing Professional Training

As a technology that can visualize complex processes in the physical world, AR technology can make teaching more vivid and intuitive. In surgical nursing training, it often involves the introduction of the functions of some internal organs of the human body and the use of some precision medical tools. In traditional teaching, the auxiliary teaching tools used by teachers include real-size models of organs, pictures, videos, and legends. These auxiliary teaching tools usually only provide a fragmented view of the body, which is relatively abstract. As a result, nursing students only pay attention to a certain part of the body, and it is difficult to connect it to the entire body of the real patient

The use of AR technology can achieve in-situ visualization, which can provide a higher degree of body transparency, and help nursing students understand the structure and function of the internal organs of the human body. In foreign countries, existing institutions have tried to use AR technology as teaching support in nurse training to teach lung anatomy and physiology. Students can use the mouse to operate according to the three-level headings A, B, and C + the first two characters of the first two characters of the heading. Even students who do not understand computer knowledge can also use the online help and the medical record standard format authorization help function to use the system smoothly. In recent years, with the development of college informatization, network teaching has become an important development direction of teaching reform. At present, heuristic, discussion, interactive and other teaching methods are mostly used in geriatric nursing teaching. It is mainly teachers who play a leading role. Teachers teach content in class. It is difficult for all students to understand in a short time. Students review and discuss after class. The resources needed for communication and communication cannot be resolved. The construction of the student-assisted area solves the needs of students to learn elderly nursing knowledge. The platform provides a wealth of teaching resources for elderly nursing, and students can learn according to their own learning interests.

The design of AR training teaching system is very important to its application. First, the design of the program must conform to the principle of human-computer interaction, simple and clear, so that nursing students can quickly get started; second, because the system involves a lot of surgical nursing expertise, the development of the system requires the collaboration of technicians in multiple fields. In addition, the medium in which the system is used is also an issue that needs to be discussed. The devices that can be equipped with AR systems include mobile phones, computers, smart glasses, etc. How to choose a suitable device medium to balance the cost of the device with the teaching effect is a factor that has to be considered.

2.3 The Computer Aided Platform for Training Nursing Professionals

Surgery coordination, surgical positioning, use of specialized instruments, and disinfection and sterilization methods of instruments are all archived in the operating room computer teaching database. Knock image processing software mainly processes and synthesizes special effect processing for the images of digital cameras, and inserts them to make the courseware have rich pictures and texts to deepen the impression and make it easier to understand and remember. The animation design software integrates the video taken by the digital camera into a dynamic effect in the form of animation and sound. The nursing staff standardizes the process after watching it, and establishes a standardized reference with a template. Our department has not yet applied visualized professional web design software. With the reform of the new tertiary hospital, this part of the work is accelerating the pace of construction. Students can complete the simulation operation of collecting data and formulating nursing plans through man-machine dialogue, and master the operation methods of nursing procedures and the skills of correct and standardized nursing medical records.

The teacher supplementary area realizes the real-time interaction between teachers and students, and between students and students in the network environment. Through online discussion, students can obtain the latest teaching content at any time, and communicate with teachers, which enhances the communication between teachers and students, so that learning is no longer restricted by time and place, and has greater freedom to give full play to students. Enthusiasm and initiative have improved the learning efficiency and effect of students, and more reflected the individualized and interactive learning characteristics of learners. Teachers use the online Q&A platform to conduct statistical analysis on the type, number, and frequency of students' questions. Teachers understand the doubts, difficulties and main problems encountered by students in learning, and guide students in a more targeted manner, providing a realistic and effective way to achieve personalized teaching.

3. CONCLUSIONS

The successful development of the "Nursing Medical Record Writing Training System" is our first attempt to use CAI in nursing teaching. Practice has proved that the system is scientific, advanced and practical, easy to use, solves the key and difficult problems in teaching, and improves the teaching quality of the course. It is not only suitable for students to learn nursing procedures, but also can be used for clinical nursing staff Carry out training and assessment of nursing medical record writing and formulating nursing plan. In nursing teaching, the use of CAI technology is not only feasible, but also the needs of the development of the times. The unique advantages embodied by CAI will surely promote the reform and development of nursing teaching.

4. REFERENCES

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