The Application of Web-based Computer-assisted Instruction Courseware within Health Assessment

Guo Xiuyan

Department of Clinical Nursing
Faculty of Nursing, Jiujiang University
Jiujiang, Jiangxi 332000, China

Abstract

Health assessment is a clinical nursing course and places emphasis on clinical skills. The application of computer-assisted instruction in the field of nursing teaching solved the problems in the traditional lecture class. This article stated teaching experience of web-based computer-assisted instruction, based upon a two-year study of computer-assisted instruction courseware use within the course health assessment. The computer-assisted instruction courseware could develop teaching structure, simulate clinical situations, create teaching situations and facilitate students study.

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1. Introduction

There were some researches about the benefits of computer-assisted instruction (CAI) within many fields. Also, some experts have stated that the integration of computer into clinical nursing education could promote and enhance students learning about clinical practice skills [1]. Web-based computer-assisted instruction, a rich educational resource, could help faculty and students accomplish instructional design, faculty-student interactions, time and technology management and student outcome evaluation [2]. It is more and more being used in nursing programs to deliver course content.

Health assessment is a clinical nursing course and places emphasis on clinical skills. There are many nursing professional knowledge about symptoms and signs which can only be learned and obtained from patients in the hospitals, and many knowledge about clinical nursing practice which need to be

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demonstrated the methods [3]. The traditional classroom lecture was less effective. Moreover, in our country, most of computer-assisted instructions of health assessment were developed by means of medicine concept, the application of CAI courseware is seldom in the nursing field. Therefore, web-based CAI courseware within health assessment was developed and applied into teaching associate nursing program by our faculty.

This article stated teaching experience of web-based CAI courseware, based upon a two-year study of CAI use within the course health assessment. The purpose of this paper is to explore how to apply computer technology into nursing course health assessment and the benefit of using computer-assisted instruction courseware in nursing teaching. The application of CAI courseware is stated as follows.

2. Develop teaching structure

The computer-assisted instruction changed the single teaching form of traditional classroom lecture and further developed teaching structure of practical course “health assessment,” which can promote the integration of theory teaching and practice teaching.

Multimedia CAI courseware combined animation, sound, picture, simulation and other means into teaching system which gave students access to knowledge through a variety of sensory channels simultaneously. It had a characteristic of three-dimension of text, sound and images. Video and audio production were presented in the form of WAV and AVI file formats, and then made into RA and RM compressed files in order to assure network transmission speed. The pictures could be obtained in the following ways: CD-ROM multimedia materials, Internet, scanner, or through Photoshop, CoreIDraw, windows drawing board and other software tools, presented in the form of JPG, GIF, SWF. The animations were set by the software of Flash, Fireworks, 3DMax, implementing computer simulation technique. In some cases, the click buttons were set up to achieve the goal of human-machine interaction. Finally, all kinds of files were connected into webpage through ASP technique [4]. Take the heart for an example, cardiac structure including atrium, ventricle, valve, aorta and pulmonary veins could be showed to nursing students through pictures; heart sound and heart valve auscultation through audio or video files, cardiac blood circulation through animations.

The information transmitted through CAI courseware guided students how to think critically, provided more pictures about patients’ diseases and how to operate nursing skills, which led to a series of changes of teaching process and elements. It formed an open classroom teaching structure, student-cantered teacher-led interactive teaching structure, achieving the information exchange among three parties of teachers, students and computers. In addition, clinical practice could be demonstrated step by step through the multimedia animation, which transferred theoretical knowledge into concrete operational skills and enhance the application of skills training.

Web-based computer-assisted instruction made the combination of multimedia and network technologies. Nursing students could study knowledge and practice nursing skills independently through the network courseware in their spare time. The questions could be put forward by e-mail, message boards and BBS forums, where the teachers and students communicated each other and resolved problems promptly. The information of web-based courseware could be updated based on the progress of clinical knowledge on the real time. The network multimedia teaching improved academic learning environment and methods. The dissemination of operational skills and technical knowledge were free of limitation by time and space.
3. Simulate Clinical Situations

Multimedia CAI applied the data storage, compression computer techniques into setting plenty of pictures, sound and animation when simulating clinical situations, inspiring students’ interests. In the traditional class, the teacher explained nursing knowledge in the narrative form, making teachers difficult to talk clearly and students difficult to understand abnormalities of the patients. There was one phenomenon in the traditional class that some students had a weary mood in study nursing knowledge. In the CAI class, the teachers simulated clinical situations with picture, sound and animation instead of only abstract language.

At the same time, some researches existed to affirm simulation as a teaching strategy, which was a miniaturized version of some sphere of real-life activity [5]. In the chapter of common symptoms assessment, e.g. nursing care of the patients with jaundice, the faculty manufactured the systemic and local structure pictures of the primary liver cancer with very typical jaundice performances, especially stained yellow sclera and mucous membranes. It showed the most real situation in the liver cancer disease so that nursing students had an intuitive understanding, making the foundation of using nursing process to analysis nursing cases in the hospital. Take heart percussion for another example, there was the animation courseware showing students how to find the body surface location of heart. A nurse taught students how to choose the right place, the right way to percuss heart border in the correct sequence. This animation was played after telling the theory about the heart knowledge, promoting nursing students impression on the knowledge of heart and nursing students’ high concentration of attention.

4. Create Teaching Situations

Creating teaching situations for difficult learning points made students easier to study knowledge. Because of complex medical situations, some symptoms and signs are not easy to see in the hospital. Our faculty used the Flash, Fireworks and 3DsMax computer techniques to develop similar medical situations. The assessment of heart valve auscultation is very important, but is particularly vulnerable to confusion. The multimedia courseware with heart valve model enabled students to review anatomical structure, blood circulation and four valves structure, carefully listening to sound generated when the valve closed, observe the direction of sound transmission through blood flow, and identify five heart valves auscultation body location by setting the click buttons in the model, implementing human-computer interaction model.

Health assessment is a practical subject, which nursing operation should be paid more attention, so that students had more opportunities to practice, more hands-on chance, more critical thinking [6]. During the teaching of abdomen assessment, the CAI developed the human models about hepatomegaly, Murphy’s sign positive, positive signs of appendicitis. If the student's palpation method was correct, the model would voice a "ouch"; if the operation was wrong, it would not occur. Multimedia courseware increased students’ participation opportunities in the operation teaching scenario. Therefore, this transfer of multimedia in teaching attracted students with a great enthusiasm. It not only improved the practice ability but also enjoyed the learning fun.

5. Facilitate Students Study

Compared to stand-alone version of multimedia courseware, the greatest feature of online multimedia courseware is its interactivity [7]. During teaching process, teachers and students created class discussion area and started a broad range of interactive activities through e-mail, BBS, blog, etc. Carry out online
tests, including terminology, filling in the blank, true and false, multiple choice and short answer questions. It provided students the opportunities to practice and answers for students to self-evaluation.

6. Conclusion

In summary, multimedia CAI courseware possesses images, intuitive features. Web-based computer-assisted instruction has rapid, accurate and high-capacity characteristics, making dissemination of technical knowledge free of limit time and space. Reasonable and effective arrangements for inside classroom instruction and outside the classroom discussions increase the capacity of teaching information and the density, level and intensity of practice. Therefore, the rational and effective use of multimedia teaching network can achieve a multiplier effect of teaching effectiveness and improve the quality of teaching specialized courses.

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References


