口腔超音波網路教學系統之建立與評估

Establishment and evaluation of a Web Based Oral Ultrasound Teaching System

中文摘要

診斷用超音波在臨床醫學使用相當經濟方便，它可以即時(realtime)展現舌部運動的狀況，而且對人體無害；此外，可將超音波影像經由錄影設備儲存，方便進一步的觀察分析。因此，超音波已成為近年來研究舌部運動功能的重要工具。今日電腦數位科技及網際網路技術一日千里，對我們生活各個層面都有著極大的影響。而資訊與醫學的結合應用也相當受矚目，例如:網路門診系統、遠距會診及醫學多媒體教學等，都有很高的學術和應用價值。有鑑於此，本研究以網際網路架構為基礎，發展口腔超音波網路教學系統，以台北醫學大學牙醫學系四年級學生，共 61 人為對象，擷取其口腔超音波影像並建置網路教學系統，讓學生透過網路學習超音波課程。架構中以提供學生線上超音波儀器模擬操作系統為特色，讓學生可以不必親自到超音波室上機學習操作，而可以在家學習使用超音波儀器。同時導入多媒體的優點，讓過去傳統教學的靜態超音波畫面，可以在線上以動畫影音展示，增強學習效果。此外也用 Flash 技術，讓同學以像看電影的方式，來了解課程大綱。在系統教學使用的評估上，我們特別以問卷的方式來瞭解學生的使用情形，結果顯示超過九成的同學對本系統抱持正面肯定，認為可以提升其對超音波課程學習的效果；尤其是針對動態影像展示的部分，比平面靜態資料確實可以輔助學習。未來希望藉由網路科技持續的發展，讓本系統可以更活潑生動，同時也期待以此研究為起點，未來在牙科教育上導入更多的網路學習課程，讓學生在學習上能更多元化、高效率化。

英文摘要

Diagnostic Ultrasonography has advantage of being noninvasive. It shows real-time images and can be applied easily and repeatedly on patients. Quantitative measurement of tongue movement with ultrasound had also been reported these years. Therefore, ultrasonography has become a valuable tool for study tongue morphology as well as tongue functions. In the present development of broadband networking today, it is technological advances an aspects of our lives. There are many applications of word wide web in medical field have been reported, such as, on-lined outpatient service system, distance consultation, and multimedia teaching system. It was the purpose of this study, to set up an oral ultrasound teaching system on World Wide Web, and to provide a better learning for our students. Sixty-one volunteers were chosen from dental students at Taipei Medical University. All images used in this study were taken from these students. This teaching system

provides on-line simulation of ultrasound machine. Students can learn any time and anywhere through Internet. With the use of multimedia technology, sound based dynamic ultrasound images can display through Internet so as to enhance the learning efficiency on tongue movements during swallowing and phonation. Furthermore, we applied flash technique to provide students a movie styled introduction of the teaching program. In addition, a questionnaire was designed to evaluate the learning effect of this system. The result demonstrated that over 90% of the students held positive to this teaching system and agree with that it helps enhancing their learning on oral ultrasonography. In the future, we hope to enrich the content and apply more advanced multi-media technologies to improve our teaching system. Widely application of such web-based teaching system on Internet in other fields of dental education and research are strongly suggested.