

E-learning Development on Health Promotion for Music Performers in Taiwan

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Abstract—Problem: In Taiwan, approximately 62.1% of all music majors in universities have suffered musculoskeletal injuries. [1] Health Promotion in Schools of Music Conference (HPSM) 2004 proposed that university music departments provide a “course that covers the occupational health concerns related to music.” [5] The conference concluded that schools of music play a vital role in helping reduce the incidence of performance-related injuries, as first contact medical surrogates. Therefore, the courses on Health Promotion for Music Performers (HPMP) are important for the students of music majors. HPMP course needs the interdisciplinary experts, music and medical experts. **Method:** In the research, we use e-learning on the courses, Health Promotion for Music Performers. To facilitate cross-domain interaction and cross-school mentoring, an e-learning model was adopted. The collaborative efforts of the Department of Music at the National HsinChu University of Education (NHCUE) Department of Music and the Department of Family Medicine at the National Taiwan University (NTU) College and Hospital of Medicine enabled NHCUE’s Graduate Institute of Music to conduct the ‘Health Promotion for Music Performers’ (HPMP) Course and adopted an e-learning model since the spring of 2009. **Result:** HPMP course by e-learning will make the medical expert easy to get the teaching aids and case experiment sharing by e-learning in his hospital. After transitioning to an e-learning model, HPMP now utilizes the JoinNet digital platform.

Index Terms—music performance, health promotion, e-learning

INTRODUCTION

In Taiwan, approximately 62.1% of all music majors have suffered musculoskeletal injuries. [1] In the United States, about 34%~62% of (senior) high school students and 39%~87% of adult music performers have Performance-Related Musculoskeletal Disorders (PRMDs).

Many students majoring in music that begin university studies with preexisting psychological and physiological conditions [3]. According to a Taiwanese survey, 60.4% of all music majors rely on themselves or seek assistance from professors and instructors when faced with a performance-related injury. The same survey found that only 21.6% would turn to health professionals for help. [1]

Royal Academy of Music investigated students majoring in performance and discovered that the most frequently occurring performance injury problems are pains and discomfort caused by poor posture and excessive practice and performance anxiety. The investigation showed that students tend to seek advice from professors before seeking medical treatment (Williamon & Thompson, 2006) [2]. The surveys further reveal that music majors most frequently turn to music department professors when faced with performance-related health problems. Within the department of music, students regularly look to instrument and vocal instructors for guidance. This data implies that music department teachers can play an integral role in advocating “Health Promotion for Music Performers” (HPMP).

Health Promotion in Schools of Music Conference (HPSM) 2004 proposed that university music departments provide a “course that covers the occupational health concerns related to music.”. In 2005, the American Performing Arts Medical Association (PAMA), and National Association of Schools of Music (NASM) jointly proposed Health Promotion in Schools of Music (HPSM). This plan was conceived as a response to appeals made by the Health Promotion in Schools of Music Conference (HPSM) held in 2004 [5].

Currently, the music education landscape in Taiwan seems quite robust as a growing number of students are becoming interested in music studies. According to statistics published by the Taiwan Ministry of Education in December 2009, the average number of high school students per year enrolled as gifted and talented music students totaled 6,727 of which 3,620 were male and 3,107 were female. University students declaring music majors numbered 5,849 with 1,089 male and 4,760 female students, statistics data from Statistics report the college students, high school department data 2008. [4]. Examining the number of individuals preparing for

professional music careers between high school matriculation and college graduation yielded an average number of 1,731 students per year. As both past and current students pursue the “perfect performance”, they often endure long periods of repeated practice. Therefore, collaborative efforts between music professors and health care professionals to increase awareness of HPMP among music majors have received increasing attention, becoming a significant matter.

In the research, the HPMP program adopted a modified real-time online learning model that focused on teacher guided course content and teacher-student interaction. Course design and scheduling responsibilities fell on the Department of Music at NHCUE. The cooperating team from the NTU College of Medicine then assisted with designing a performance health e-learning portal (<http://health.edu.tw>). Comprised of the six learning websites of the Taiwan Ministry of Education, this website sought to bring medical experts, academic sector advisers, information management experts, and instructors together to create an extensive health and medical knowledge base.

With a stable curriculum framework and operational model established, this course was opened for the first time at NHCUE’s Graduate Institute of Music in 2008. Most of the graduate students enrolled were primary and secondary school music teachers or professional musicians. The course’s emphasis on performance health awareness not only directly improved individual performance health, but also indirectly helped children and young students by instructing their future teachers in performance injury prevention.

MATERIALS AND METHODS

Health Promotion for Music Performers Course

The research team divides the e-learning course, Health Promotion for Music Performers, into a three tiered curriculum framework: Prerequisites Course, Core Course, and Applied Course. The Prerequisites Course provides students with basic knowledge concerning physical and mental health. The Core Course then combines physiology and psychology to help students better understand performance health. Lastly, the Applied Course emphasizes implementation skills that promote performance health. The Applied Course also introduces evidence-based medicine and teaches data analysis of medical literature as a means to better equip students to participate in HPMP research.

E-learning platform

To allow students to immediately ask questions and provide interaction between students at NHCUE and teachers at NTU, we establish an e-learning platform in the research. Moreover, we plan to provide teachers be able to put their presentation materials on the platform before the classes during the HPMP course. The Architecture of e-learning on HPMP shows in Figure 1.

This course attempted to take advantage of Taiwan’s well-developed network infrastructure to combine e-learning with occupational health education. As such, this study applied an e-learning platform to cross-disciplinary team teaching to conduct the HPMP Course. The three-way interaction between physicians, performance instructors, and music majors fostered by the use of this digital platform creates an interdisciplinary teaching model and provides practical means to prevent occupational performance injuries.

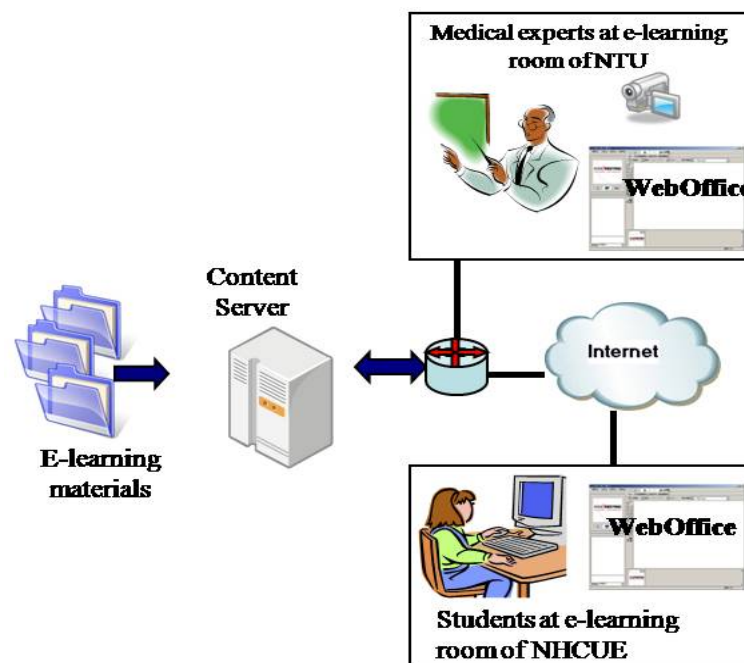


Fig 1. Architecture of e-learning on HPMP

RESULT

Health Promotion for Music Performers Course

The three tiered curriculum courses for HPMP include:

- A. Prerequisites Course: provides basic knowledge of musculoskeletal structures, fitness, mental health, and preventive medicine.
- B. Core Course: integrates prerequisite knowledge with specialized physiological and psychological issues to better understand musculoskeletal performance related injuries, hearing impairment, vocal health, and performance anxiety.
- C. Applied Course: introduces Somatic Movement Therapy evidence-based medicine, stress relief skill implementation, and Alexander Technique,

JoinNet E-learning platform

JoinNet, software developed by Far Ancient Technology Corp., can carry out multi-user and multi-point video multimedia conferencing. The JointNet platform on the e-learning HPMP application shows in Figure 2. This course utilizes JoinNet to achieve real-time face to face e-learning instruction. Through the use of microphones and webcams, Institute of Music graduate students and professors located in the Distance Education Classroom at NHCUE, can interact with doctors situated in the E-Learning Classroom at NTU via real-time video and voice conferencing. Students can also access JoinNet via remote desktop during live lectures to observe how different speakers present class content, thus creating smoother student-teacher rapport. For example, this e-learning platform allows students to immediately ask questions through an interactive online white board. Alternatively, teaching assistants can gather these questions for general discussion post-lecture. Whether real-time or delayed real-time, student inquiries and teacher responses can be simultaneously displayed on the whiteboard, and all content is recorded for follow-up research and analysis.

Procedure

HPMP E-learning Course instructors use presentations prepared with Microsoft PowerPoint and archive broadcasts with PowerCam screen recording software. Without post-lecture modifications, all presentations, including speaker video broadcast, voice, explanatory slides, and even mouse cursor movement, are recorded and catalogued as digital teaching materials. Each class period runs for a total of 100 minutes, and consists of 60 minutes PowerCam lecture, uploaded to the XMS e-learning platform server, followed by 40 minutes of question and discussion. Instructors find this schedule gives sufficient consideration to both building knowledge and answering student questions.

DISCUSSION

In the HPMP course by e-learning modes, medical professionals seem to have a beneficial impact on performer occupational health education via interdisciplinary expert cooperation. This e-learning course not only improves music major performance health literacy, but also indirectly strengthens student digital learning aptitude which will help the future adoption of subsequent e-learning courses. Furthermore, both current and future research data can provide physicians with a reference model to help improve the occupational health of professionals engaged in other fields of expertise besides music.

The research also found that the digital whiteboard enabled the accurate replication of specific questions, seemingly enhancing information retention and participation during real-time discussions. These results suggest an e-learning based HPMP course can help students rapidly build basic knowledge of performance health in a short period of time.

Moreover, pre-recorded video presentations played via an e-learning platform seem to enhance the efficacy of interdisciplinary teaching. The digital whiteboard's ability to display student questions and teacher responses appears to encourage and strengthen teacher-student interaction. Instructors implemented the HPMP e-learning course through the use of the JoinNet e-learning platform. This platform can play pre-recorded PowerCam video files as well as accurately broadcast voice, explanatory illustrations, and cursor movement in detail.

CONCLUSION

Music performance is a series of elaborate and dynamic adjustment processes because music performance involves fine motor muscle control. In the research, this course currently has not covered instrument ergonomics yet. In the future, HPMP e-learning courses will improve real-time transmission quality. So, to further improve the class, HPMP will need to utilize higher quality real-time transmission. Such increased video quality and detail can be particularly advantageous when carrying out real-time ergonomic analysis of students. For example, real-time transmission of high-definition (HD) quality video would enable experts to immediately recognize nuanced changes in student performance, such as finger movement. Therefore, we will upgrade the transmission technology to provide real-time fine motor control ergonomic guidance and improved Q&A discussion to enrich and enhance future HPMP e-learning courses.

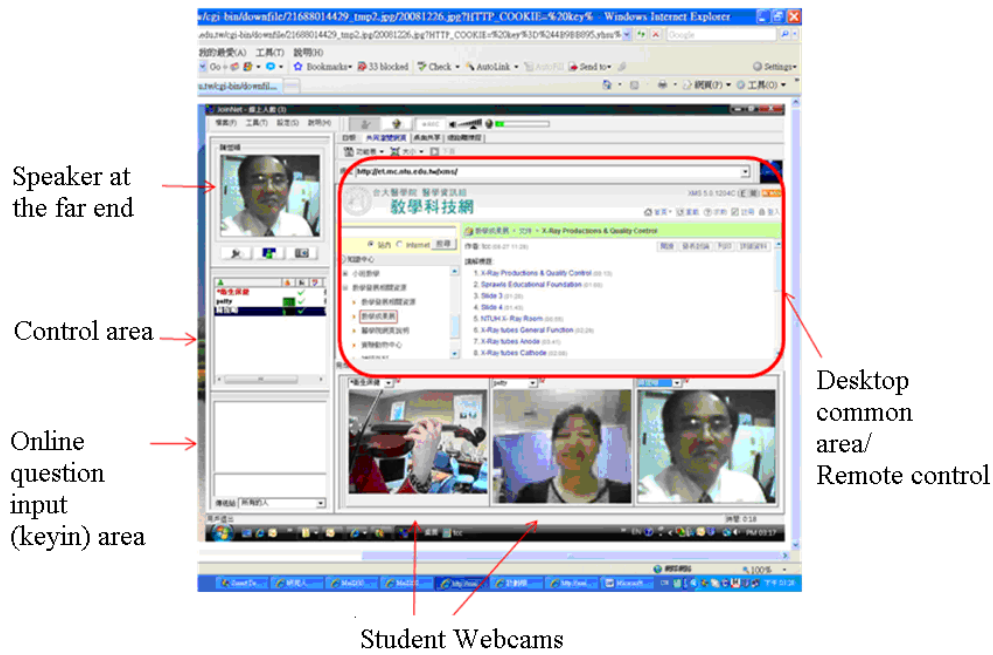


Fig.2 JointNet platform

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