Wireless Computer Games and Applications in the Medical Education Curriculum: Adventures in Pedagogy

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Abstract. This manuscript reports work on the first of several related projects in a series entitled "Adventures in Pedagogy". Serious Computer Games and Applications on wireless devices connected to the Internet are commonly embedded into everyday clinical practice. Yet a review of the literature indicates a scarcity of such curricula in undergraduate medical education. Graduates are evidently not well prepared for wireless e-health practice during University study. Consequently, we have introduced a selective for first year medical students called "Computer Games and Applications for Health and Wellbeing". The selective is designed to support the clinical application of the wireless tools in an ethical and practical manner while embedding fundamental IT concepts to help prepare graduates for new practice horizons.

Keywords: medical education, health informatics education, professional education, wireless technology, telemedicine, telehealth.

1 Introduction

Most clinicians agree that mobile access to Serious Computer Games and Applications (SCG&A) using wireless devices over the Internet has opened new practice horizons for health. The SCG&A are designed to facilitate improved health and wellness outcomes, epidemic intelligence and public health event detection [1]. Many SCG&A tools are already widely used in Australian, if not international, clinical practice.

Designers of medical education curricula have largely overlooked the SCG&A health practice milieu [2]. Anecdotal evidence suggests the enormous amount of information students must learn over their five year undergraduate qualification militates against explicitly introducing informatics into the medical curriculum [3]. Educators would be well advised to develop a dialectic curriculum that resolves the current mismatch between ubiquitous SCG&A tools for health and busy medical education models. We have begun to address the mismatch by introducing a Selectives unit, "Computer Games and Applications for Health and Wellbeing", into the first year undergraduate medical education.

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2 Study Design

We rely on a qualitative grounded theory study design to facilitate a research approach encouraging reflection on the continuous interplay between data collection and analysis.

2.1 Aim

The aim of this work, the first of several related projects in a series entitled "Adventures in Pedagogy", reflects on the process of embedding health informatics into MBBS curriculum to support graduates for future wireless practice.

2.2 Methods

We use an action research method. Action research is well suited to exploring and sustaining change processes to established curriculum.

2.3 The Site and Milieu

The Selectives program at Monash University (Victoria, Australia) offers first year Bachelor of Medicine Bachelor of Surgery (MBBS) students' non-clinical units to study during their second semester. The program provides students with opportunities to develop or acquire new or existing skills outside traditional areas of medical education. The Selectives program ran for eleven weeks for two hours between July and October 2011.

2.4 Participants

We are the only participants at this stage of the research program, which has received University human ethics authorization.

2.5 Evaluation

Students will evaluate the unit in October 2011 using a tool we have developed and the Student Evaluation of Teaching and Units tool administered by Monash University (4). Both evaluations will be triangulated with data collected from our reflections. These data will be analysed interpretively so we may analyze the full complexity of Selective outcomes.

3 Learning Objectives

Unit learning objectives were informed by several meetings with MBBS candidates of varying experience over many years, daily interactions with colleagues, familiarity

with the relevant educational and health informatics literature and professional expertise [5].

3.1 Course Content

The course content was designed so that the medical students might "dip their toes" into mobile e-health tools for education, epidemic intelligence and everyday practice. It incorporates technology skills assessment and training as required, followed by classes supporting students to devise a suitable evaluation tool. The tool will guide the students' reviews and analyses of serious computer games, telehealth/telemedicine portals, smart phone and tablet applications, social media and 3D applications. The cohort will be organized into groups divided according to free applications using tablets or smartphones connected to the Internet from the classroom. At the Selective conclusion, each group will present their reviews. We hope to publish the student work collaboratively in the future.

4 Support and Logistics

Multidisciplinary University support for the unit included access to devices and other resources drawn from Faculty colleagues and those from IT Support and E-Learning divisions. Expertise from the entire Monash community underpinned much of the syllabus design.

The multinational Australasian College of Health Informatics (ACHI) membership made several suggestions for meaningful syllabus inclusions too. ACHI members often used their own professional networks to support the selective [6]. The authors drew on a generous range of international expertise to inform the classes on topics such as the application of telehealth and telemedicine (public health) to African and transient communities, 3D worlds hosted locally, in New Zealand and the United Kingdom. This pedagogical adventure would not have been able to proceed without such direct and collegiate support.

Finally, the Selectives' focus on personal and professional development provided a ready-made vehicle for us to offer a new topic, simplifying logistics management. The unit did not require integration into an already busy curriculum [3]. The challenge of embedding health and medical informatics syllabus into medical education more generally is among the subjects of our current research interests.

4.1 Marketing the Selective to Medical Students

The published literature and anecdotal evidence based on research experience from the biomedical and health informatics arena informed the Selectives title. While many clinical students may be technologically savvy this does not necessarily translate to comfort using wireless devices for health in real life [2]. Clinical students often believe new informatics pathways in medical education are too hard to learn as part of their degree program (7). Thus the friendly, if a little misleading, term "computer

games", a Selective component, is embedded in the unit title. To ameliorate this concern the entire syllabus overview was published to students on the University's internal e-learning system.

4.2 Syllabus Overview

Key learning goals for each class were framed to ensure Selective learning objectives were largely achieved. However we hoped detailed content would largely be driven by student enrolees. Delivering the Selective was likely to call on the complete depth and breadth of our informatics and research experience.

5 Conclusion

The introduction of medical education curriculum methodically examining mobile access to innovative wireless SCG&A tools on the Internet seems a logical response to new practice horizons for health. We are gratified to be part of an international vanguard of medical informatics educators involved in enriching health professional education.

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