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Feasibility Study of Incorporating Personal Digital Assistants (PDAs) into a Problem-Based Learning Approach to Medical Education at the University of Wollongong

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Abstract

Objective: To determine the key functionalities of personal digital assistants (PDAs) applicable to medical education. Study design: Interview and focus group were designed. The in-depth interviews were conducted with the medical school stakeholders in order to gather the needs and interpretation about the PDAs functionalities in medical education. Results: Based on a comprehensive review and findings from interviews, four significant functionalities of PDAs were found, these being (i) a clinical log, (ii) a personal portfolio (or e-portfolio), (iii) reference information, (iv) communication and connectivity. Conclusion: There is considerable potential for employing PDAs as a learning tool in medical education.

Keywords:

personal digital assistants, medical education, problem-based learning

Introduction

The University of Wollongong (UOW) established a Graduate Medical School (GSM) and accepted students for graduate entry in 2007. The medical curriculum was designed to use 93 clinical problems based on the contents of the core curriculum. The core delivery strategy is case-based learning by monitoring the students' progress through a whole course as an independent learning exercise. The use of IT is integrated into the course in order to assist in course delivery. Students start to practice in the regional area from year 1, and are required to practice in clinical placement in a rural setting for a 40-week period. IT will be integrated and facilitate learning while the students are practicing in the clinical placement.

The purpose of this research is to study the feasibility, applicability and functionalities of incorporating PDAs into medical education especially for the UOW GSM. Accordingly, the research question for this study is: what are the key functionalities of PDAs applicable for medical education in a problem-based learning (PBL) curriculum? To answer this, it is essential to understand the general context of PDAs, their functionalities, how they have been applied in the medical and nursing professions, and barriers to using such devices therein. It is necessary to understand the roles of using PDAs in medical and nursing curricula, how they have been used in medical and nursing curricula, and what functionalities have been integrated into medical education.

PDAs have been used for clinical references, tracking clinical encounters and clinical decision making and e-learning in medical education, and they can provide a user friendly interface and multimedia tools enabling students to learn at their own pace [1-3]. Furthermore, using PDAs as an educational tool has a high degree of acceptance from clinical students. The important barriers for incorporating PDAs into the healthcare sector are data security, patient privacy, privacy protection and interception [4-6]. Moreover, data access, data storage and retrieval and the loss of data [7] are major concerns in the use of PDAs in clinical practice. On the other hand, usability, interference and security are not a problem if the systems are well designed and free from the barriers previously mentioned [5]. Other important problems are interoperability, interference, patient privacy, scalability, and connectivity [5, 6, 8]. The use of PDAs in medical education can help medical faculty to monitor student performance and bridge the gap between student education and their clinical experiences, as students can take PDAs into clinical placements while having contacts with patients. Almost two-thirds of US medical schools integrate PDAs into residency programs [9]. Various uses of PDAs in medical education are student patient log systems, classroom assessment systems, teaching and interaction evaluation, objective structured clinical examinations (OSCE) and medical research [7, 9, 10].

Methods

Interviews and focus groups were designed accordingly. At this stage in-depth interviews with 15 stakeholders, have been undertaken; these aim to bring out information about the meaning, complication and interpretation from participants [11]. Moreover, they allow new understandings and theories to be formulated during the research process [11-13]. Results from these interviews have yet to be analyzed into different themes using `NVivo` software. These themes will then be used to conduct focus groups in the next phase of the project.

Interviews

Relevant medical stakeholders were contacted and interviewed face-to-face. The open-ended questions were asked about the appropriate PDA functionalities for students to use during their study years, what kind of information needed to be stored in the PDAs, how PDAs can be used in PBL approach, how to synchronize data back to servers, and what type of network connection is used. The interviews lasted approximately 30 minutes for each participant. All interviews were transcribed and analyzed based on content analysis [12, 13]. The interview answers were analyzed and categorized.

Results

Four major functions have been identified to date, these being: (i) clinical logs, (ii) personal portfolio (or e-portfolio), (iii) reference information, (iv) communication and connectivity.

Discussion

Mainly PDAs are to be used as a learning tool because of their portability and accessibility to information anywhere and anytime. The stakeholders express many needs of incorporating PDAs to GSM. Security and confidentiality are important concerns when using PDAs in the real world, particularly when recording patient logs and e-portfolios. Furthermore, stakeholders want PDAs to have the ability to access medical references. In addition, to fulfill the needs of using PDAs in medical education, PDAs must be well equipped with the standard IT systems, particularly for communication and data synchronization back to the central servers or data on demand (DOD) [14]. On the other hand, PDAs need to be connected to GSM systems for data transmission from remote locations to central servers. Currently UOW has access to medical databases such as AccessMedicine, MDConsult and Medline. Having PDAs in hand will assist students in referencing material.

Conclusion

PDAs can facilitate learning in medical education particularly in a PBL approach by using clinical logs and e-portfolios in order to keep track of students' progress. Wired or wireless PDA connectivity and communication functions would support and enhance students to learn as well as communicate with faculty while away in clinical placements. In the future, we plan to continue this study by conducting focus groups with medical, nursing and IT experts in order to gain a better understanding of how *best* to incorporate PDAs into a PBL-based medical curriculum.

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