Multidiscipline Multi technologies: How can technology support allied health students from multiple disciplines increase their access to clinical training?

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This paper describes the current progress of a federally funded project that is attempting to provide a multidisciplinary approach to increasing the clinical training capacity of undergraduate health students. Students from five disciplines: physiotherapy; podiatry; psychology; medicine and nursing from the one Australian multi-campus university are being encouraged to undertake a small component of their clinical placement in local hospital settings that are supported by the project and state government health networks. Using an exploratory case study approach this paper reports on the early stages of the project and highlights some of the issues in dealing with the myriad of stakeholders and how various technologies are being used to connect with students and provide supports and spaces to reflect.

Keywords: health, multidiscipline, online, placement, reflection

Introduction

It has long been thought of that patients in our health system can be better served by using a multidisciplinary approach to their care rather than the traditional doctor patient relationship. According to Pirrie et al. (1999) "Each therapist should be aware of the specific skills of others in order to achieve effective and cohesive collaborative working . . . The philosophy of integration should start at undergraduate level and can be progressed [sic] throughout the career development of all therapists". Various attempts have been made to try and encourage a more wholistic approach from a range of clinicians but health systems and the existing treatment cultures have limited or stifled these more inclusive treatment strategies. The education and training of health professionals in our higher education institutions also generally tends to follow this traditional model whereby students undertaking their clinical experiences on campus and in health training sites are exposed to this same scenario. In trying to achieve a multidisciplinary approach to the overall delivery of health care programs tertiary institutions continue to try and provide opportunities for their students to work with students from other health disciplines. This may be done through common lectures and/or tutorials, seminars or through the use of guest speakers. The success of these joint study opportunities may be limited by crowded curriculum requirements, physical constraints caused by multiple campus locations or often by traditional approaches to course delivery. Most tertiary institutions offering health care courses coordinate a range of clinical placements to support their programs in a variety of ways. The common approach to these placements is that each discipline tends to operate in isolation when placing their students in community-based hospitals, clinics and surgeries. For example, nursing students are placed in hospitals at various times throughout their course and at times during

the year that are quite independent from other physiotherapy or medicine students from the same institution. The University of Western Sydney (UWS) is a multi-campus university with six campuses and the offering of health programs is distributed over a number of these. To support these programs in terms of allied health clinical placements students are required to attend a dispersed array of location across the local region and in some cases inter and intrastate.

The Problem

There have been attempts to try and change these clinical placements to allow students from different disciplines to be part of a health care team but problems of coordination and facilities being able to cater for this have proved to be some of the obstacles. The Increased Clinical Training Capacity (ICTC) Project was established to try and bring together groups of professionals and students from a range of disciplines to combine their knowledge, experience, perspectives and skills to target specific chronic diseases that are prevalent in local communities. This approach is considered to provide a more holistic, patient-needs focused service resulting in improved patient outcomes and a better trained, more effective and professionally interactive healthcare service. Preparing students for the dynamic changing global healthcare workforce requires an even more encompassing breadth of approach. (Frenk et al. 2010) This study is exploring how various technologies can be used to support a undergraduate students from the five healthcare programs of nursing, psychology, medicine, physiotherapy and podiatry who are taking part in an alternative clinical placement approach. A project team of academics, clinicians, administration staff and educational development consultants was setup to manage and coordinate these quite diverse groups of students and provide access to teams of clinicians at a number of training sites at nearby hospitals. Of the four sites planned one is fully functional with the others at various stages of development.

The Approach

Students from these disciplines have been given the opportunity to volunteer to attend a number of specialised clinics at these sites and work along side the clinicians. The complex nature of the environment in terms of the people and varied locations together with time restraints, lends this research to use an exploratory case study methodology (Stake, 1995). A range of technologies is being explored and monitored to support these students before and during their attendance at the clinics. A number of data gathering techniques have been employed in order to gauge the success or otherwise of these support mechanisms. These include pre clinic surveys, mixed discipline focus groups, and final exit surveys, using a combination of collection methods including paper-based, online and collection via mobile devices. This work in progress looks at the technologies that are currently being used and also those that may be used to provide alternative forms of support for the students.

Current use of technology

As well as providing students with access to a multidisciplinary experience it was envisaged that they would also be exposed to new technologies that are being used in health care. Depending on the nature of the training site and the associated health service, the scope for using these technologies has at this stage been limiting. Part of the Project plan has been to provide the students with access to the Internet to allow for research and exploring the background of patient conditions that they encounter. Hospital networks are very restrictive and providing this access has been a challenge. It was fortunate that the current operating site has had previous collaboration with students from the university and therefore access to the outside world, from within the hospital, has been facilitated by allowing the students to use their normal student identification details to authenticate via a proxy server. It was also hoped that there may be wireless access in the hospitals to allow students to use their own devices but due to security issues stated these have not been made available.

Various forms of communication have been used in order to contact and brief students on the requirements for the clinics. This process has been inhibited by the broad range of students involved from the five disciplines who also may be at different stages of their course. The University's learning management system – based on Blackboard, does not easily allow for cross course communication and therefore this was not convenient. From an expression of interest to take part in the Project students are contacted by their preferred email address, as well as their university email. Due to the changeable nature of the clinics and associated patient numbers last minute changes must be communicated with the students. To assist this the placement coordinator has resorted to using *SKYPE* to SMS students. Once a commitment has been made to be involved students are manually given access to a specially designed site in the LMS that is being used as a one-stop shop for project and hospital requirements.

One of the important outcomes of the Project is to gauge the benefits of providing students with a multidiscipline experience in order to gain an awareness of the contribution of various members of the health

care team. A number of methods are being utilised to gain feedback and provide and a space where they can share their involvement in the clinics. After each clinic a quick paper feedback is collected to obtain a snapshot of the experience. An online community sharing space has been setup for the purpose of allowing students to engage with each other using the social network tool *NING*. In health communities Parboosingh (2002, p.1*)* suggests that they allow participants to *interact with peers and mentors to frame issues, brainstorm, validate and share information, make decisions, and create management protocols, all of which contribute to learning in practice* It was decided to use an environment external to the university's LMS that was easily setup and managed but also provide a more 'Facebook' look and feel. Students are invited to join and comment on general involvement in the Project but also encouraged to provide brief snippets of their clinic experience via the inbuilt blogging tool.
At this stage of the Project the student use of this space is sporadic. Students have made initial comments but are slow to make additional contributions. Members of the Project are varying the layout and content to encourage increased engagement. An example of a student's comment from this site shows promising positive feedback in these early stages of the Project.

> *"From the perspective of a nursing student, I found this clinic session invaluable as it forges an appreciation of various disciplines that I had previously taken for granted within the hospital. Furthermore, it facilitates greater learning of "discipline specific" terminology. Overall, fantastic and can't wait till my next clinic"*

Most of the students involved are doing so on a voluntary basis and as such a formal assessment is not required. The nursing students however, are able to gain placement credit if they complete a designated number of hours. As the NING social space does not allow for private comments an alternative mechanism to collect journal entries at various stages of the students involvement will be created within the LMS site using the personal blogging tool (Learning Journal).

Planned use of technology

As the Project develops there are plans for providing students and the clinical staff involved access to resources and technologies that will enhance the experience. The students coming from different perspectives and stages of their courses will be provided with printed material covering the process and procedures but it is hoped that basic clinical knowledge and resources will be supported using various technologies and online materials.
A series of **online modules** will be produced that will give students an awareness of the roles and clinical approaches that they may encounter while attending a clinic. For example access to "Intro to Podiatry" will give non-podiatry students an understanding of some of the terms, techniques and treatment plans that a podiatrist may use in their clinics. These modules will be produced using a variety of online tools that will allow for quick development of stand-alone resources by the Project's non-technical educational consultants who are liaising with both the clinicians in the community and the discipline Program coordinators on campus. The modules, based on existing templates, will use a variety of multimedia components to deliver a *SCORM* compliant package. Access to these modules will initially be via the LMS but they may also be available to students on mobile devices in the clinic settings. One of the challenges in the development of these modules will be to produce meaningful modules with appropriate content that may also be available to the clinicians. Various software tools will be used to produce the videos (interviews) and audio content for inclusion in the modules.
Each of the clinics is being supported with a **range of equipment and technologies** that will provide students with an engaged and authentic experience. Some of the clinics, for example "Fatty liver disease" clinic require sophisticated equipment for diagnosis and treatment. The Project needs to balance the operational needs of the clinical together with providing the students access to the use of these technologies.
An important component of a students' placement will be the need to interact with the various patient and **clinical practice management software.** At least two of the sites will be provided new forms of this software that will allow students to be aware of the complexity of data that is obtained on patients from within the clinics and from external sources such as pathology results. Using these tools is complicated by the fact that students will need basic levels of access in order to comment on their interaction with patients. Investigations are being made to see if student contributions of clinical notes can be input from mobile devices and then 'signed off' by the clinician.
The environments where these clinics have been or will be setup are varied and often require both the clinicians and the patients to move from one area to another. The patients may see a range of professionals depending on their health issues. This mobile nature of the scenario will be explored using a range of mobile devices that will facilitate the treatment of the patient and be able to expand the educational opportunities for the students. This will as described by Olney & Lefoe (2007) give *Personal access to mobile technologies providing learners with opportunities to be flexible in the way they collect, store and share information to support their problem solving*.

The practice management software being investigated will allow for the entry of patient data via a mobile tablet that communicates with the local installation of the software.
The use of tablet technologies will be further introduced into the Project through the piloting of the use of a number of **iPads.** Initially this will be done by setting up the iPads with a range of medical and allied health related applications to provide students, and possibly staff, with immediate access to these resources. These will include MIMS, Harrisons Medical Manual of Medicine and Epocrates. The second phase of their use with students will be to use these devices to take notes and record evidence from the patients (and clinicians) that will help them contribute to a health care plan for the patient. Students will use various applications such as Note Taker HD, Notability, ChainR and Popplet for this purpose. One of the important procedures that students will be able to contribute to will be the multidisciplinary debrief at the end of a clinic session. It is hoped that these devices will connect to an HD television will allow them to visually explain their understanding of the cases and their suggested treatment plans. Where appropriate the iPads will also be used in an innovative way through the use of a wireless hand-held microscope and its associated app. The app will display the vision of the microscope and allow for patient viewing of the live feed, freezing of the frame in view and capturing images that can be used to assist diagnosis or inform the patient. This hopefully will allow the students to become more engaged with the patients.
Due to the disperse nature of the clinics the Project may also explore the use of low level video conferencing between students and clinicians using these devices with applications such as *Facetime* and *SKYPE*. As mentioned the limitations provided by the hospital environments will also pose problems for the use of these devices where they are required to communicate with the each other and the outside world. It is expected that there will be technical issues with the iPads including connectivity problems but this will be reduced through the use of 3G cards and thus avoiding wireless networks. It may be possible to setup a dedicated *ICTC wireless network* for this purpose.

Conclusion

It has long been considered that better outcomes can be achieved through a multidisciplinary approach to health care by allowing patients to be treated by a range of health care professionals. It has also been the desire of educational institutions involved in the delivery of medicine and allied health programs to be able to bring together teams of students from different disciplines and give them a more rounded and wholistic experience while undergoing their courses. This paper reports on a work in progress of a Project that is endeavouring to use multiple technologies in an effort to support this approach. The current use of technologies is evolving and the planned usage to provide students with increased access to clinical training will need to be flexible to cater for the multiple environments both at the training sites and online.

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