



Use of online delivery including *CaptureCAM-PRO* in teaching Applied Pharmacotherapeutics courses in the Pharmacy program

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Abstract: Conventional online delivery and more recently *CaptureCAM-PRO* have been used to present selected content modules in the Applied Pharmacotherapeutics courses in the Pharmacy program at the University of South Australia. This paper reports on student feedback to the trial use of *CaptureCAM-PRO* and is set in the context of student feedback about online delivery in the Applied Pharmacotherapeutics courses overall. Several feedback themes can be identified. Students reported that they 'prefer face-to-face teaching'; however flexibility of place and time of learning is also highly valued. The information gathered has allowed staff to review the online resources to potentially improve overall student satisfaction.

Introduction

The University of South Australia is committed to the intelligent use of emerging technologies, particularly in the development of flexible learning and teaching. The Pharmacy program in the University of South Australia is typical of most Pharmacy programs in Australia, whereby little overall emphasis has been placed on the use of self directed online activities. At the University of South Australia all pharmacy students are enrolled as internal students and therefore student attendance at lectures, tutorials, practical sessions and workshops is expected by both students and staff. The average contact time for students is 24–26 hours per week. Currently in most of the university's Pharmacy courses, staff and students make use of the university centralised web supported learning management and delivery system (*UniSAnet*) whereby lecture notes, quizzes and useful links are posted to course 'shells'. In the Applied Pharmacotherapeutics courses some online learning modules have been developed and linked to the course 'shell'. Students undertaking these third and fourth year courses should be able to demonstrate:

- knowledge of pharmacotherapeutics;
- the application of pharmacotherapeutic knowledge to ensure Quality Use of Medicines; and
- the skills necessary to apply this knowledge within the professional context.

In 2004 problem based learning (PBL) tutorials were incorporated as a new small group format modality to assist students to gain appropriate depth of understanding of materials presented in lectures. The major issue which emerged following student evaluation was the increased time required for group meetings and private study time that the PBL tutorial format required. Staff teaching within the program have responded to the issue of time management by conversion of some lectures into a *CaptureCAM-PRO* format, in addition to a rationalisation of the lecture program. This platform allows capture of screen content, audio and mouse movement, which is then highly compressed making it possible to email the file to students or to place it on a course web page. For example, a 10 minute presentation is compressed down to a size of less than 1MB, which can be managed by most students, even those operating from low-speed modems at home (*CaptureCAM-PRO* 2005). This platform provides audiovisual recordings of lecture material that may be studied by students at a time that is most convenient to them. Lectures chosen for conversion to this format were considered to be either very content rich and 'dry' covering fundamental concepts of renal function; or lectures where students needed to grasp a skills-based process, such as how to best use consumer medicines information when dispensing prescriptions. Materials presented in the *CaptureCAM-PRO* format are provided in this format only and are not presented face to face in a lecture format again providing flexibility of access for students.

The topics chosen for online development were ones where academic staff considered that face-to-face lectures had high 'rote' content where engagement of students was difficult to achieve. For example, online resources developed for the antimicrobials module included information and links to resources. Completion of this module required students to actively work through these, preparing summary tables and undertaking case studies to test their ability to apply this knowledge. There were links to animations of mechanisms of action and to mechanisms of resistance. Materials presented in the antimicrobials module are provided in an online format only and are not presented face to face in a lecture format, thereby providing flexibility of access to students.

This paper reports on student feedback to surveys around both conventional online resources and *CaptureCAM-PRO* format lectures.

Methods

Two individual questionnaires were made available through the University of South Australia online survey tool *TellUs*. The first of these (administered in 2004) sought to clarify students' views of 'online resources' in the teaching of Applied Pharmacotherapeutics. The second of these (administered in 2005) sought specific feedback about the use of *CaptureCAM-PRO* as an online teaching modality. All students enrolled in the third year Applied Pharmacotherapeutics courses in each of these years were emailed information about the reasons for undertaking the survey and invited to respond. Data collected through the online tool *TellUs* is automatically de-identified.

Results

The first study sought to determine students' views about the use of online resources in third year pharmacy courses. Seventy six of the 154 eligible students (49%) responded to the survey.

The first two questions in the survey sought to explore the students' access to online resources and their understanding of differences between accessing and working through online resources. Results (shown in Table 1) indicate that students are able to differentiate between 'looking at' and 'working through' online materials.

Students were then asked why they liked and disliked the online resources. Twenty eight respondents cited that the major reason for liking online resources was convenience of access to study material. For example comments on the availability of online lecture notes included 'I can annotate them (lecture notes) and its much easier to revise for exams using them' or 'resources are easy to gain access to simply by clicking the Mouse's button (sic) and print icon'.

Some student responses indicated an appreciation of the self-directed aspects of online resources; 'it's fun and we can get it at anytime and very convenient helps you learn more with the graphics and special effects' and 'I liked all the topics which had case studies....it made the topic seem more interesting and relevant'.

Table 1: Percentage of students choosing each option for two separate survey questions which sought responses to questions about 'looking at' and 'working through' online materials.

	% of students selecting each option		
	Extensively	Sometimes	Not at all
Question 1: I have looked at the online materials provided on the course homepage	47	47	6
Question 2: I have worked on the online materials provided on the course homepage	22	70	8

Reasons for disliking the online resources were more varied. Accessing and printing lecture notes was problematic for some; 'If you want to print out anything as hard copy it takes time and we have to 'cut and paste' all the time' or 'I dislike the fact that its kind of troublesome for me to go to the



web site daily to download the lecture notes... It would be much better to give the lecture notes during the lecture, to encourage people to come to the lecture as well’.

Some feedback (14 respondents) was specifically directed around the concept of online learning. There were several comments indicating strong dissatisfaction with self directed online materials being presented. These included ‘you have to be really self motivated to do it’ and ‘I don’t have time to teach myself. I’m paying the university to teach me not make web pages.’ Another comment in a very similar context was ‘It costs my parents \$10,000 a year to keep me at university. If I could do this whole degree online that would be OK, but since I have to be in Adelaide to study parts of the course I would prefer to have contact lectures/tutes/pracs’.

Other student comments were around the time taken to complete online resources:

More time was required to complete the online components than would have been spent in the corresponding lectures, this inequity confused me as if something was supposed to take 4 hours of lectures, and now takes upwards of 7 to complete as an online exercise.

For some, the lack of contact with the lecturer was seen as a problem; one student commented ‘we were unable to determine which parts of the resources to focus on’ another commented ‘plus in lectures they really emphasise the important points, which can sometimes be hard to grasp via on line learning’ another commented ‘...replacing in person lectures is not a good idea. This further provides alienation from the teaching members.’

The second study sought to determine students’ views about the use of *CaptureCAM-PRO* as an online presentation tool in third year Pharmacotherapeutics courses. Seventy two of the 133 eligible students (54%) responded to the survey. The first question in the survey sought to explore the students’ access to the *CaptureCAM-PRO* online resources. Of the 72 students who responded to the survey 64 (89%) stated that they had accessed the *CaptureCAM-PRO* lectures with only eight stating that they had not.

Students were then asked for comments about what they liked about the *CaptureCAM-PRO* lectures and what they disliked.

Students liked the fact that they could work through the materials at their own pace (23 students) with many commenting on the fact that they could pause the presentation. One commented:

I could pause and write notes or rewind a bit when I missed something. Unlike in lectures, sometimes the lecturer talks too fast or simply too fast for me to jot notes. I really liked the fact that I could replay and understand at my own rate.

Twenty two respondents indicated convenience as a major benefit.

Reasons for disliking the online resources were more varied. Students disliked the fact that the *CaptureCAM-PRO* presentations could not be printed (33 respondents) and thirty-two respondents thought the presentations were boring. Several students commented on the time that the *CaptureCAM-PRO* lectures took to run through, for example ‘I also thought that there was too much information – perhaps shorten and reiterate the main concepts’ and ‘I also feel that there was a lot of information that we were supposed to get through’.

Several students (five respondents) commented on the value added aspect of conventional face-to-face lectures; ‘no chance to ask questions and you can’t really tell what it is important to know’. Other comments included ‘I may not specifically know what a lecturer wants us to focus on’. Other comments included ‘Questions cannot be asked during the lecture’ and ‘it’s not like a proper lecture, just doesn’t feel right’.

Discussion

All Universities in Australia employ the web to some extent for teaching and learning purposes. With respect to pharmacy teaching, in the UK it has been recognised that with increasing staff student ratios, computer based technology may contribute to quality pharmacy education (Taylor, Bates and Harding 2004). However pharmacy programs in Australia have not paid extensive attention to the development of online resources. In a world wide context, web sites such as MERLOT indicate a limited uptake of online resources in pharmacy with only one online resource indexed against pharmacy and 2136 such resources referenced against business (Merlot 2005).

The Pharmacy program has adopted the use of online resources, including *CaptureCAM-PRO* presentations, in addition to face-to-face learning. The content of the online modules and *CaptureCAM-PRO* presentations is not presented in face-to-face lectures; the materials are only available online. Feedback about online modules and *CaptureCAM-PRO* lectures in Applied Pharmacotherapeutics courses was sought from students so that staff could address concerns and therefore improve student satisfaction.

There are several common themes in the collated student feedback for both online modules and online *CaptureCAM-PRO* lectures. With respect to positive feedback, students were enthusiastic about the convenience and accessibility of both online modules and online *CaptureCAM-PRO* lectures.

Negative feedback could also be sorted into themes. One theme related to issues of technology, all others were related to our design of the online modules and *CaptureCAM-PRO* lectures. Conventional face-to-face lectures across most of our courses are supplemented by provision of downloadable online lecture notes. *CaptureCam-PRO* lectures need to be similarly supplemented. Current technology does not allow printing of *CaptureCam-PRO* screens, but separate files of the lecture notes will be able to be readily provided thus overcoming this very simple problem, but one of major concern to the students.

Secondly good face-to-face teaching includes clear statements of learning objectives. Survey results suggested that students self identified difficulties discriminating the importance of content presented in online modules and in *CaptureCAM-PRO* lectures. In the light of this feedback we re-examined both formats. Both included clear statements of learning objectives, although unlike face-to-face conventional lectures these learning objectives were not reiterated subsequently. Reiteration of learning objectives will be addressed in revisions of both the online modules and *CaptureCAM-PRO* lectures.

Thirdly feedback around the extensive time taken to work through the online modules and *CaptureCAM-PRO* lectures will provide teaching staff with the impetus to re-examine the materials, tasks and activities in terms of the time that these will take an average student to work through. Guidelines from Golas (2000) and Ally (2004) which provide explicit instruction for design of online learning will be used to guide redevelopment of the online modules and *CaptureCam-PRO* lectures to improve student readability and student navigation through the online materials.

Although not mentioned by students in either survey, feedback to students about their learning has been identified as a critical issue in regular university surveys of teaching and learning student satisfaction. Retrospective analysis of our online modules and our *CaptureCam-PRO* lectures has indicated that although clinical scenarios have been used to illustrate clinical applications of the information contained in these resources, there were no opportunities for students to engage in formative assessment activities thus obtaining feedback about their learning. This will be addressed by incorporating questions which will give students an opportunity to practice their learning.



A small number of students in both surveys did not appreciate the concept that students need to develop self directed learning skills. Included among the University's graduate qualities is 'Graduates of the University of South Australia are prepared for lifelong learning'. Similarly the Pharmaceutical Society of Australia in *Competency Standards for pharmacists* (Competency Standards for Pharmacists in Australia 2003) has defined the importance of life-long learning for pharmacists. Staff teaching within the program need to recognise that there is a slow transition from high school matriculant to university graduate embracing life long learning. Program design to reinforce development of life long learning skills in the earlier years of the pharmacy program may be required.

Development, implementation and evaluation of the online modules and *CaptureCam-PRO* lectures to present materials in the Applied Pharmacotherapeutics courses has been an exciting process for the staff involved. Using online approaches for some content delivery has allowed us to provide some schedule flexibility for students and use some collaborative intense face-to-face small group teaching in the Applied Pharmacotherapeutics courses.

It would be noteworthy to be able to determine whether learning outcomes for students differ dependent on content delivered by conventional online, conventional lecture or *CaptureCAM-PRO* lectures. Our courses are integrated and concepts covered in lectures, and presented in whichever format, are reinforced in other learning modalities such as the PBL tutorials, practicals and experiential placements. Therefore isolation of the content presentation modality is impossible.

We have not planned to reintroduce lectures for content delivery of those materials currently delivered online or in PBL. As discussed above, introduction of some schedule flexibility is valued by the students. Issues identified by students such as printing of resources, the time taken to work through online materials and clear identification of learning objectives will be addressed in revisions of the online materials. Lastly as stated above the development of life long learning skills needs to be addressed throughout the program.

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