The Development of a Managed Learning Environment using WebCT to Facilitate 4th Year M.Pharm Undergraduates Ability to Counsel Patients in Preparation for OSCEs

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Observed structured clinical exams (OSCEs) are a recognised way for educators to measure competence of pre- and post-qualified health care practitioners. Within the pharmacy practice division, School of Pharmacy and Biomedical Sciences, Portsmouth University, UK, OSCEs have become an established part of final year of the curriculum. However, student cohorts over the last three years have successively demonstrated poor performance on counselling patients, one of the key stations.

In an attempt to improve counselling performance, a web-based package was constructed containing standardised counselling templates. Student access to the site was monitored and evaluated along with assessment scores compared to the uptake of the site. It was found that students who had used the site scored significantly higher marks than those who had not. In addition, students believed the site was beneficial and would use such a site again if the opportunity arose.

Keywords: Observed structured clinical exams; Counselling; WebCT; Curriculum

INTRODUCTION

For the majority of students attending a higher education institution, the award of a degree represents the culmination of three or four years study. By its very nature, a person holding a degree in a subject-specific discipline could be deemed competent. This is especially true for vocational courses such as medicine and professions allied to medicine. However, though a degree may be a measure of knowledge and achievement, it does not necessarily reflect potential competence in the field in which the graduate will work.

Generally, curricula are organised around different subjects (units) in order for students to predominantly pass written tests or submit satisfactory coursework. This system of curriculum delivery may fall short of preparing students to practice at the beginning of their chosen profession. This has led to educators developing appropriate assessment tools and techniques in order to help judge whether, an individual meets the practical criteria required to enter that profession. Competency-based assessments are now commonplace in medical schools and are increasingly common in nursing, dentistry and pharmacy (Bramble, 1994; Manogue and Brown, 1998; Ross *et al.*, 1988; Belcher *et al.*, 2000). Since 1999, competency-based assessment (observed structured clinical exams [OSCEs]) of final year undergraduate pharmacy students has been conducted within the pharmacy practice division at the School of Pharmacy and Biomedical Sciences, Portsmouth University.

Over this time student performance and satisfaction have been monitored (Rutter, 2001; Rutter *et al.*, 2001; Rutter and Brown, 2002). This has led to year-on-year modification to the structure, administration and level of student support offered for the OSCEs. However, findings have consistently shown that students perform most poorly in counselling patients on prescribed medication. By allowing patients to make informed decisions about their medication and, therefore, to be potentially more concordant, this function is a key role for pharmacists. The division thus decided to provide additional support material to students in preparation for their final assessment.

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A managed learning environment, WebCT, was used to disseminate material relating to the improvement counselling technique. This web-based software has a number of benefits to both the student and the academic team. WebCT provides a suite of tools to enhance teaching and learning by delivering course material, self-assessment and feedback via a web browser. This has advantages to the student in terms of flexibility, allowing access at any time and from anywhere. The material is self-directed and therefore, can be undertaken at an individual's own pace. Immediate, individualised feedback to each student is provided. For the academic team, WebCT has the facility to monitor student access. This can be used as a tool to identify students who are not participating, thus providing an opportunity to help students who may require additional support.

The aim of this study was to determine if additional support material via a web-based platform aided fourth year M.Pharm undergraduates in performance during the counselling workstation of an OSCE assessment.

METHOD

Prior to the construction of the WebCT site, a list of delivery routes (e.g. ocular, oral and inhalation) were drawn up along with certain products which are commonly prescribed but have complex counselling associated with their proper use (e.g. malaria prophylaxis and metronidazole). For each route of delivery or product, literature from the manufacturers, standard textbooks, websites and journal articles were reviewed. From this data a standardised counselling template was constructed for each delivery route and product. Once constructed, a consensus opinion was agreed upon for each counselling template using academic members of staff who were pharmacists.

This information, along with other salient material, was converted into WebCT compatible format and loaded on to the site. In addition, a self-assessment exercise was constructed along with a feedback form. In total, the site consisted of 19 pages of core information. After testing all pages to ensure they downloaded, the site was made operational on 25th February 2002, two weeks before the OSCE practicals started.

All final year students received details on how to log onto WebCT and access the site. Students were also encouraged to complete the online feedback form prior to them taking the OSCEs. This form included student perception to the site layout, content and overall relevance. Three practical OSCE sessions were delivered in March and April 2002, and consisted of two formative practical classes followed by a summative assessment. The delivery and format have been previously reported (Rutter, 2001).

Student data was analysed using the software provided by WebCT and statistical analysis was performed using Minitab.

RESULTS

One-hundred and four students took part in the OSCE practicals. Seventy six students (73%) accessed the WebCT site before their first practical, and 33 (43%) completed the online survey form.

The site pages received a total of 2437 hits between 25th February and 15th March 2002. A breakdown of the distribution of hits is shown in Table I. Most students accessed more than 21 pages of information (76%) indicating that they visited most pages more than once. This is supported by evaluation of the student tracking facility of WebCT. One of the intentions of the web-based learning resource was to encourage students to visit the site frequently. However, 36 students (47%) visited the site once only. Of these students, the most likely group to visit the site once were the students who accessed the least number of pages on the site (Table I). Inspection of the individual pages visited by students shows that all but the introductory page (81 hits) was visited over 100 times (Table II), ranging from 104 (antibiotic 2) to 190 (metered dose inhaler) hits. Sixty-two of the 76 students accessed all counselling template pages.

Students who accessed the WebCT site prior to their summative assessment did score significantly higher marks for the counselling component of the OSCE than their counterparts who had not accessed the site ($p < 0.05$, 1 tailed t-test).

Students were given the opportunity to express their opinion on the WebCT counselling site via an online survey. All but one student (97%) who responded to the survey believed that the use of WebCT as an additional learning tool was beneficial. The one respondent who felt it was not

TABLE I Student usage of the WebCT site

Total number of hits made by each student to the site	Number of students ($n = 76$)	Number and % of students who only visited the site once ($n = 36$)
1–20	18	13 (72%)
21–40	34	14 (41%)
41–60	12	6 (50%)
61–80	6	1 (17%)
>>81	7	2 (29%)

TABLE II Number of hits each individual page received

Routes of delivery	Number of hits	Ranked position
Metered dose inhaler	190	1
SSRI	169	2
Warfarin	166	3
Antimalarial combination	157	4
Generic counselling template	149	5
Antimalarial monotherapy & advice	147	6
Suppository	147	6
Estrapak	140	7
Buccal	137	8
Pessary	134	9
Combined oral contraceptive	133	10
GTN spray	130	11
Eye drop	115	12
Nasal drop/spray	114	13
Antibiotic 1 (e.g. metronidazole)	113	15
Eye ointment	111	16
Antibiotic 2 (e.g. penicillin based)	104	17
Introduction	81	18

beneficial qualified their response, however. The respondent maintained that the site was useful but as a learning tool was inadequate because many students simply logged on to the site and downloaded the information, never to revisit it. All students ($n = 33$) said that, given the opportunity, they would use such a site again. In general, respondents found the layout of the web site very good or good (91%) and easy to navigate around (76%). A small number (22%) did state they experienced difficulty logging on to the site. This may go some way to explaining why other students did not access the site at all. The least visited page on the web site was the introduction page. This was unfortunate; the introduction page also contained a list of active links to further material, such as the electronic BNF. Only 13 respondents accessed the links from the introduction page, but 12 of these 13 respondents found the links to be either helpful or very helpful. One function of WebCT is to allow students to gain immediate feedback via self-tests and quizzes. The web site did contain a self-test but only 22 of the 33 respondents from the online survey said they had used this function. However, the majority (73%) who did use the self-test stated it was helpful or very helpful.

Students were also asked to articulate any further comments they had regarding the web site at the end of the online survey. A number of respondents stated they had trouble reading some of the web-based information on the screen and found it easier to print off the information and read and revise from a paper-based source, which meant they only accessed the web site once. Other comments were positive, stating they had found the site helpful and a useful aid to OSCE preparation.

DISCUSSION

OSCEs have become an accepted and established part of the pharmacy practice undergraduate curriculum at Portsmouth University. Comments made by successive cohorts when surveyed have been positive (Rutter *et al.*, 2001; Rutter and Brown, 2002) and continual improvements to their administration and level of student support have been made each year in response to student feedback. However, since their implementation, student scores in counselling have been consistently lower than other workstations during the final summative assessment. Because past student perception is that they would perform best in counselling patients, this statistic is a cause for concern (Rutter *et al.*, 2001). This mismatch between perception and reality may be rooted in the fact that talking is a natural act we do everyday.

The provision of a web-based site appears to have had a positive impact on student performance of counselling ability. Summative scores were significantly higher in those students that accessed the site and the average mark for the 2002 WebCT cohort (5.8 out of 10) is higher than the previous 2001 cohort (5.4 out of 10), although this was not significantly higher. Unexpectedly, the counselling template page was not the most accessed page. It was envisaged that as this page provided a generic "blueprint" to counsel patients on prescribed medicines, it would be the page which students would seek out; the other pages were more specific and had less general application. It is possible that students may not have realised the page's significance because a full explanation of the site was given on the introductory page, the least visited page within the site. Alternatively, cynics may claim that students guessed that the information on specific products would be featured on the summative assessment and therefore, concentrated on this information.

While the number of completed online survey forms was lower than what was hoped, the respondents' views were supportive of the concept of a web-based system to support their learning of counselling technique. This is encouraging, because increased student numbers are leading to higher staff-student ratios and greater demands on the teaching staff to deliver the curriculum. Therefore, any medium, which is well received and allows students to actively engage in learning while simultaneously not increasing teaching staff contact time should be broadly welcomed. However, there are a number of disadvantages to web-based learning, including potentially high start-up costs and the need for ongoing IT support.

Despite this initiative's apparent benefit to students, the performance of students on counselling is still an academic concern. In response to this, a year

two unit on communication skills has been re-written and will be delivered using multi-media technology from semester one, September 2002. This will hopefully improve student awareness of the importance of counselling, which they will take through the course until their final assessment via OSCEs in year four. In addition, the division is currently conducting focus group work with pharmacy students to determine their attitude toward patient counselling.

CONCLUSION

The introduction of a web-based system to help students improve their counselling skills appears to have been a worthwhile exercise. The system has the advantage of being attractive to both students and staff. It allows students to have remote 24 h access and provides an interactive platform, and for academics it allows usage to be monitored and student progress to be tracked.

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