Putting post-registration nursing students on-line: Important lessons learned

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Summary  A web site and discussion forum to support a part time degree course for nurses was introduced not only to support student learning but also to encourage students to use and develop their IT skills. Previous cohorts had identified that health informatics skills needed to be addressed more explicitly throughout the programme. The aims of the project were to: (i) evaluate the use of the web site and discussion forum; (ii) determine the barriers to using the web site and discussion forum; (iii) identify ways of overcoming any barriers. The first aim was addressed by analysing web page hits and contributions to the discussion forum. Students’ experiences of using the web site and the discussion forum were collected using a questionnaire and followed up by a focus group made up of high and low users of the discussion forum. Students who had accessed the web site most often felt they had been able to communicate with their peers (Spearman’s $\rho$, $p < 0.01$) and had gained peer support by accessing the web site (Spearman’s $\rho$, $p > 0.05$). None of the participants in this study had used a discussion forum before and whilst some students had the skills and confidence to contribute to the on-line discussions, others ‘lurked’ and some did not access the discussion facility at all. Strategies for improving the engagement and quality of on-line learning are proposed from the lessons learned during this study.

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Introduction  The use of information technology in health care has the potential to impact upon patient care, by improving the accessibility of health information for all, and by increasing the use of telecommunication and telemedicine applications.
It is important that nursing students, and nurses currently working in health care settings, develop the skills required to make maximal use of these technological developments. The challenge facing nurse educators is to incorporate technology appropriately into teaching to facilitate student learning and to assist and enhance the preparation of nursing students to meet the demands of professional nursing practice.

The uptake and use of technology in teaching and learning in nurse education has been slow, but is now gathering momentum. A Department of Health funded project reviewed the national education, training and development provision in health informatics in pre and post-registration courses (RHIED, 2002). There was a wide variation between schools as to what IT and health informatics skills were taught and the level students were likely to achieve. There are numerous reports in the literature of the successful implementation of applications such as computer assisted learning particularly into pre-registration courses (Wharrad et al., 2001; Lowry and Johnson, 1999; Tetley, 1999).

Web based delivery of course resources and electronic student support via a web based discussion forum is another means of increasing the exposure of nursing students to computer applications. Clarke (1998) described the benefits to students of incorporating a web site into an existing course. Students were able to use the computer to locate professional information. The development of skills to use electronic systems for networking with colleagues within the relatively safe academic environment will provide the basis for professional networking in the practice setting (Ballard, 1999).

There are a number of reports of positive experiences when students participate in on-line discussions (Davidson-Shivers et al., 2001; King, 2001; Swan, 2001) but there is little evidence that positive student evaluations translate into effective learning. This mode of learning is too recent to have been thoroughly researched. Most of the evidence is based on small-scale case studies comparing on-line with traditional learning. From a purely pragmatic rather than pedagogical stance, some students have felt disadvantaged by on-line delivery and frustrated with persistent technical problems with platforms housing the learning materials. Lack of support from tutors and peers, and problems with accessing a computer or the lack of skills to use them effectively, are also issues that have been responsible for students dropping out of on-line courses or being unable or unwilling to access e-resources (Hara and Kling, 1999; Anthony and Duffy, 2003).

This paper analyses the use of a web-site providing electronic resources and a discussion forum for post-registration nursing students on a part time degree course. Implications of the findings and suggestions for enabling students and tutors to make effective use of web resources in teaching and learning are offered. This project was funded by a mini-project grant awarded in 2001 by the Learning and Teaching Support Network centre for Health Sciences and Practice.

Educational context

A web-site to support a part-time degree course for registered nurses was set up in September 2001. The course director for this programme wanted to increase the exposure of these mature students to information technology (IT). A one day workshop on IT and using the world wide web was introduced at the start of the programme. Students were also shown how to access the course website and discussion forum and were encouraged to use the electronic resources and contribute to the discussion forum. Students had access to a number of computer user areas including some allowing 24 h access. The aims of this project were:

1. To evaluate the use of the web site and electronic discussion forum by staff and students for peer and tutor support introduced as a complement to the classroom based learning.
2. To determine the barriers to using the electronic resources and discussion forum by students and tutors by comparing ‘high’ and ‘low’ users.
3. To identify ways of overcoming the barriers in using technology provided to enhance the student’s learning experience.
4. To use the experience gained from this small scale study to plan the development of on-line support for the full post-registration programme at the School of Nursing, Nottingham.

Description of course and setting

This is a part-time degree programme that combines a course of undergraduate study with a professional award. In a minimum of two and a maximum of five years students will develop academic and professional skills at degree level. The principal aim of this degree programme is to maintain and improve the quality of patient/client care. For this reason this programme has been designed to emphasise the roles and functions undertaken by professional healthcare workers. A broad
range of contemporary issues is addressed to enable the students to appreciate the many facets of professional practice. Depth of learning is demonstrated through the assessment strategy where work is firmly rooted in clinical practice.

The programme is organised into two parts:

Teaching Period 1: comprises of four taught modules and a period of dissertation preparation.

Teaching Period 2: comprises of the completion of a 12,000 word dissertation or extended literature review.

As part of the ongoing evaluation and course development previous cohorts have identified that information technology and health informatics skills need to be addressed more explicitly throughout the programme. There is an increasing expectation that healthcare professionals need skills that are fit for purpose and to ensure that their practice is evidence based (Department of Health, 1998). The development of the website is one means of encouraging students to develop IT skills. As this is a new development, evaluation of the website utilisation will be crucial to aid advancement of this approach.

Method

In order to address the aims, a multi-method approach was undertaken allowing the collection of both quantitative and qualitative data. The first aim was addressed by analysing web page hits and contributions to the discussion forum. These data were collected and analysed for a year along with a content analysis of the discourse in the electronic discussion forum. Students’ experiences of using the electronic resources and the discussion forum were collected using a self-reporting questionnaire. This was followed up by a focus group to enhance the quantitative data by using group dynamics to add experiential richness to the data (Kitzinger, 1995). Kreuger’s (1998, p. 18) definition of a focus group as a “carefully planned discussion designed to obtain perceptions in a defined area of interest in a permissive, non-threatening environment” reflected our aim to explore issues identified within the questionnaire in greater detail. The focus group discussion was taped and later transcribed. There were 20 students in the cohort, all were invited to take part in the study and given the opportunity to decline. The Ethics sub-committee of the School’s Education Committee approved the study; this group considers studies involving education evaluation where students are participants and may be subject to ethical issues such as coercion.

Data analysis

Quantitative data from the questionnaires were entered into SPSS and analysed using descriptive analyses. The non-parametric correlation statistic Spearman’s $\rho$ was used to investigate associations between variables since the measurement level was ordinal. The open response questions from the questionnaire were analysed by drawing out the main themes. The transcript from the focus group was analysed by coding and numbering the themes as they emerged. The themes were then summarised or merged where appropriate and listed along with quotes or examples that illustrated the theme (Robinson, 1999).

Results

18 questionnaires were returned (90% response rate) after sending one follow up letter to non-respondents. Four students agreed to attend the focus group, two were high users of the site and two were low users. On the day, one of the low users failed to turn up to the focus group.

Analysis of questionnaires

Computer access and computer use

Students lived between 2 and 50 miles from the university (mean 17.1, SD 11.8 miles). One student did not have a computer at home and two students did not have access to the internet at home. These students were amongst the group of 7 who only accessed the course website between 0 and 5 times. 6 (33%) students rarely or never accessed the site from home. 5 (28%) students felt that using the web site had enhanced their computing skills and 7 (39%) agreed that the website had encouraged them to use a computer. There was an inverse association between the ordinal scales representing frequency of use of the website and anxiety in using computers which was significant at the 5% level (Spearman’s $\rho = 0.583, p < 0.05$).

Learning support and learning opportunities

Questions relating to opportunities and support for learning suggested that for some students the website had a positive impact, for example 56% ($n = 9$) felt that the website had enhanced learning opportunities (Fig. 1(c)). 56% ($n = 9$) felt the website encouraged the sharing of resources (Fig. 1(b))
and 63% \((n = 10)\) said the website enabled peer communication and support (Fig. 1(a)). These students were those who had accessed the site more regularly from home (Spearman’s correlation for accessing the site from home and enhanced opportunities from peer support \(0.520; p < 0.05\)). The correlation between peer communication and frequency of accessing the site from home was also significant (Fig. 2; Spearman’s \(0.856; p < 0.001\)).

6 respondents (33%) did not feel that the website discussion forum enabled them to gain more tutor support (Fig. 1(d)). Some students commented that they preferred to use email to contact the tutors.

**Evaluation of the website**

The evaluations of the layout and the content of the website were very positive, the percentage of students rating the site ‘good’ or ‘excellent’ (on a five point ordinal scale) for each category are shown below:

- ‘Usability’ 72% (13).
- ‘Clarity’ 78% (14).
- ‘Appeal’ 61% (11).
- ‘Structure’ 67% (12).
- ‘Navigation’ 67% (12).

**Use of website and discussion forum**

Fig. 3 shows the trends in use of the website and the discussion forum over a 17 month period. The number of hits should be interpreted with caution; the numbers are likely to be an underestimate because a web cache operates at the university. There was a fall in the numbers accessing the site about 6 months after the launch, levels remained...
steady from then until the final month of the course.

Responses to the open ended questions on the questionnaire are summarised below:

When asked 'What did you like about the website?', students stated:
- accessibility and ease of use;
- informative about course content changes, preparation for sessions and course documentation;
- if everyone accessed the website on a regular basis then it is an excellent communication tool.

When asked 'How do you think the website could be improved?'
- Two students said the website was difficult to access.
- More tutors to access the website.
- More interaction should be encouraged.
- Publish more on the site about specific teaching sessions such as handouts for students who miss sessions.

Results from the focus group

The main themes to emerge from the focus group were:
- Barriers to access to the Website.
- Sharing of resources and peer support.
- Contact with academic staff.

When reading the quotations, it should be recognised that Student A was a low user of the website and the discussion forum, students B and C were high users. Students B and C posted five times more messages onto the discussion forum than student A.

Barriers to access

Participants were asked in the focus group about their ability to access the website and to identify some of the issues that impeded access. A key issue for some was their lack of computer skills and confidence in utilising the technology.

"I think we take it for granted these days that most people who have computers know how to use the internet as well" (Student C)

There was a correlation between feeling anxious using computers and frequency of use of the website (Spearman’s $\rho = 0.583$, $p < 0.05$) although it is impossible to speculate on which is cause and which is effect here. The lack of skills and confidence clearly posed difficulties for some and a way of addressing this through ongoing skills development throughout the programme was suggested by the students as a means of overcoming this problem.

The students found the web site of value in supporting their part-time studies, particular strengths were the increased opportunities afforded by being able to share learning resources, peer communication and support. Those students who had accessed the website most frequently from home felt that the website had facilitated their communication with their peers and provided peer support (Spearman’s $\rho = 0.856$, $p < 0.001$; $0.520$, $p < 0.05$).

As these students were all part-time from a wide geographical area the discussion forum of the website was identified very positively in the focus group.

"As you only get to see each other once a week so its nice to be able to exchange things in between" (Student B)

"…… it could be one way of people feeling less isolated, particularly if they’re away from Nottingham" (Student C)

Further evidence from the quotes below show that many students had actually accessed the website but had not necessarily become involved in an interactive way within the discussion forum facility. This phenomenon has been termed ‘lurking’ and Salmon identifies three types. The ‘free-loader’ is happy to use other people’s contributions rather than feeling the need to contribute, the ‘sponge’ is someone who needs a bit...
of time to come to terms with the environment and how to contribute on-line. The third group of lurkers are those with confidence, skills or access problems (Salmon, 2002, p. 80). These different forms of lurking are recognisable from the following comments:

"I didn’t actually contribute to the chat room but having said that it’s very interesting to find other people’s comments on there”. I wasn’t very forthcoming at the beginning to put my ideas on”

"I actually think people use it more than you think and tap into it but don’t always respond. (Student A)

Lack of confidence and the fear of exposing oneself to scrutiny by others were certainly issues for some:

"Its open and everyone can read it" (Student A)

The presence of lurkers was frustrating to students who were frequent users as they felt they were sharing but others were just utilising the site without contributing.

"I think I’ll use it again but perhaps not so eagerly. Because when you go into it and see that yours is still the last entry and nobody been …. And then it’s a bit like typing in the dark" (Student B)

A quote from a student on-line reported by Salmon (2002, p. 80) makes this point more strongly:

"It has come to my attention that we have a large number of lurkers and freeloaders in this conference (don’t take offence — just my way with words). I am not saying that a lurker is a bad person but I am saying that a lurker is using my contribution and giving me nothing in return. And that makes me feel some grievance. My experience of such things is that what you get out is in proportion to what you put in. So feel free to contribute !!”

Contact with academic staff

The course leader and the course secretary provided clarification regarding course information via the discussion forum (see Box 1). Some academic staff accessed the website particularly as the course progressed for example during the last module of the programme it was utilised effectively for communicating references and reading material by other tutors.

"you know that (Dave) would say things like we’ll post it on the website” (Student B)

This may be a reflection of both students and academic staff increasing confidence in utilising the website. In the survey only two students agreed that the discussion forum had allowed them to get more tutor support, a view supported by the open ended question asking 'How do you think the website could be improved? The response to which was more tutors and students should contribute to the on-line discussion. Concern was still expressed that even at the end of the course, there were students not accessing the site and how this could potentially disadvantage them in their studies. In a discussion about introducing asynchronous on-line tutorials Student C said:

"I think they’d be useful if you managed to get everybody to do it, you know, so that people didn’t get left out if they weren’t fond of computers”

The results reported from the questionnaires and focus groups raised a number of important issues for tutors who are planning to use on-line discussion to support student learning. These will be highlighted in discussion.

Discussion

A commitment to accelerate the pace of implementation to ‘ensure an increase in NHS IT capability and training’ forms part of the national strategic programme that aims to connect delivery with the NHS Plan with the capabilities of modern information technologies (DOH, 2002). There is a body of literature that suggests IT skills development should be delivered in an integrated fashion threading through curricula (Wharrad et al., 2002) or work based education. Previous cohorts of students on this post-registration course had themselves identified in course evaluations that there should be a greater emphasis on developing information technology and health informatics skills within the programme. The development of a course website and discussion forum is one means of encouraging students to develop IT skills. In this study, seven students (39%) agreed that the website had encouraged them to use a computer and of these 5 (28%) felt that using the website had enhanced their computing skills. Web based participation developed during a course may encourage students to take part in professional web based discussion and information exchange (Ballard, 1999). Wooster (2003) makes the same point in relation to a website to support occupational therapy students. Follow up interviews would need to be carried out to verify these claims.
None of the participants in this study had used a discussion forum before. Inexperienced users begin by exchanging 'safe trivial' information and do not initiate academic debate themselves but require triggers (Tidwell and Walther, 2002). A content analysis of the discussion forum shows the broad themes that formed the basis of the communication and seems to support this assertion.

Box 1 Discussion threads entered onto unstructured on-line forum (occurrences)

- General support and encouragement or seeking assurance (16).
- Clarification about course organisation or requirements for assignments (15).
- Organisation of social events or good wishes for festive occasions (13).
- Asking for reference materials or offering reference information (10).
- Tutor input (5).

The results suggest that we underestimated the support and input required, both at the start and throughout the module, to help students and tutors use the website and discussion facility optimally. We are now using Salmon’s (2002) 5-step model of teaching and learning on line (Fig. 4) in modules with an on-line discussion forum. At the first level, Salmon describes the essential pre-requisites for online participation as ‘individual access and the ability of participants to use online resources and interaction’. As a participant moves up the levels, they become more proactive in sharing information about the course, move from co-operation to collaboration, until finally at stage five they are able to integrate their online learning into other forms of learning and reflect on the learning processes. The e-tutor must facilitate this process. In retrospect it is evident that all students would have benefited from having more training in accessing and getting the best use out of the website and discussion forum using a framework similar to that suggested by Salmon. Developmental phases in using an on-line discussion forum have been described elsewhere albeit in different educational contexts (Schaeffer et al., 2002; Tidwell and Walther, 2002).

The focus group interview also provided the opportunity to explore the future development of the website for subsequent groups of students. This particularly focussed around the idea of on-line tutorials utilising a chat room facility. The participants were extremely encouraging with regard to this development particularly as a means of sharing resources, discussing ideas and having access to academic support. It was envisaged that this would need to be structured and planned by academic staff for example, the posting of a topic/issue of the week with supporting reading material to give students the opportunity to prepare and feel that they could contribute. This would not replace classroom based

![Figure 4: 5-stage model of Teaching and Learning On-line (Salmon, 2002).](image-url)
learning but would complement the face-to-face contact in a blended learning approach.

However, it was recognised that all students would need to develop both skills and confidence in utilising computer technology in order not to be disadvantaged (Hara and Kling, 1999; Wharrad et al., 2002; Anthony and Duffy, 2003). Skills development needs to be threaded through the course so students become effective on-line learners as advocated by Salmon (2002) in her 5-step model. Workshops on e-tutoring are essential so that all staff are aware of the pedagogy and best practice in teaching and learning on-line and will provide the interactivity on the discussion forum that the students demand. Ideally tutors should have had the experience of being an on-line student themselves (Salmon, 2002). A short in-house fully on-line course on using the virtual learning environment WebCT is being developed (‘WebCT for WebCT’) for tutors wanting to moderate their own on-line forum. Guidance on helping students and tutors to make optimal use of on-line resources is shown in Box 2.

Box 2 Guidance on helping students and tutors to make optimal use of on-line resources and facilities

- Check that the IT skills training is sufficient for all students and that follow up sessions are threaded through modules.
- Monitor which students are regularly using the website and contributing to the on-line discussion early in the module rather than later.
- Beware of ‘lurkers’ and establish reasons for lack of contribution.
- Encourage students to participate by providing e-activities to build confidence and skills slowly.
- Regular tutor input is important to students.
- Tutors themselves may need to develop confidence and skills in using web sites and on-line discussion optimally.
- Tutors will benefit from having been an on-line learner themselves.
- Salmon’s 5 stage model of teaching and learning on-line provides a tested framework for enabling effective on-line communication.

We have begun to develop a website for the whole of the post-registration programme. Since the completion of this evaluative study the whole of the learning beyond registration delivery has been developed into a new Professional Development framework. This dynamic framework provides health care professionals, from a variety of disciplines, with the chance to study for a specialist or combination studies award at both diploma and degree level. The new website will aim to provide students with opportunities to access a variety of course information, interactive chat rooms associated with both individual modules and pathways and e-learning materials to actively support their studies in a blended learning approach. This development will require careful planning because of the complexity of the interrelationships between pathways, sub-pathways and modules. There will be 40 tutors and 840 students involved in the post-registration courses at any one time. Strategies and a model for improving the engagement and quality of on-line learning are suggested from the lessons learned during this study. Further research with other cohorts of students and tutors from different subject disciplines will test the generalisability and accuracy of this framework.

References


