Innovative web-based distance learning

Nursing management of leg ulceration is a skilled activity requiring the integration of both practice and theoretical knowledge. Access to specialist education programmes is essential to gain knowledge for practice. Many existing programmes require significant attendance or offer distance learning, which can be isolating. The University of Stirling has developed a unique 8-month course which utilises interactive learning and teaching methods to overcome this. It combines minimal attendance with web-based delivery, and may be of interest to educators, practitioners, and prospective students.

Alison Coull

KEY WORDS

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Chronic ulceration of the lower leg is a common problem, affecting approximately one per cent of the population, and within this figure, 57–80% have demonstrable venous disease (The Alexander House Group, 1992). Treatment of leg ulceration tends to occur within primary care, and may cost £100–£140 million annually in the UK (Laing, 1992).

Venous ulceration is, in the main, treatable by reversing venous hypertension with the use of graduated compression therapy (The Alexander House Group, 1992). However, there are hazards of compression treatment. Incorrectly applied compression bandages may lead to pressure necrosis and subsequent limb amputation (Callam et al, 1987). Nursing management of leg ulceration is a skilled activity requiring both practical ability and theoretical knowledge. Inexperienced and untrained nurse-bandagers have been shown to

Alison Coull is Lecturer Practitoner in the Department of Nursing and Midwifery, University of Stirling, Stirling

produce reverse pressure gradients (Logan et al, 1991), which can result in a tourniquet effect at the calf, causing occlusion of skin blood flow and necrosis.

Within the UK there is a constant demand for training, both from NHS trusts and individuals. Two major guidelines were published in 1998, the SIGN Guideline, *Care of Chronic Leg Ulcer* and the RCN *Clinical Practice Guidelines* (1998); both detail the need for continued education and training to support implementation of guidelines.

However, staff shortages and increased efficiencies mean release of staff for training can be difficult. Those based in remote and rural areas find accessing education more challenging as training may require prolonged travel and overnight stays. This is both time-consuming and expensive. Individuals may be willing to study in their own time, but lengthy travel time and associated costs may not be as easy to negotiate. These problems can also stop staff from remote and rural areas from attending weekly day-release courses.

Distance learning

Distance learning facilitates study away from the educational institute, and is particularly suitable for students wishing to study at flexible times, and for students in areas where access to relevant day and evening classes is extremely difficult.

Distance learning may provide equity of access for students, but it is traditionally associated with a variety of challenges (O' Shea, 2003). Students need to be disciplined to schedule their own learning time. Self-motivation is essential to stick to studying patterns within set time-frames. Some students will miss the camaraderie of learning with colleagues, finding distance learning isolating. However, distance learning often suits mature learners, whose home and family commitments make study during conventional times impossible. The time required to work on programmes can be underestimated, and employers may finance educational fees but fail to allow any time for study. Workbook-based open learning has been used in the past, and may be viewed as a low cost/low contact option for education institutions, but this does not easily allow interactive learning or viewing of colour images. Students are also unable to discuss or challenge teaching staff which may reduce the quality of learning and may only suit limited learning styles (Fleming, 1995).

Web-based learning

Online education delivery may enhance distance learning by providing an interactive learning environment, which may virtually mimic the classroom. However, many students find accessing education via a computer isolating and frightening (Salmon, 2002). There is also a cost balance on the student, which

can be hefty. Distance learning has also been challenged for providing excessive control by course designers and little opportunity for students to challenge the 'facts' presented in course materials (Hyde and Murray, 2005). Online learning can prevent this happening by facilitating interactive activities and communication with teachers. Individual students may also use different learning styles in their approach to study; dual-encoding can be used to enhance learning by conveying information via more then one of the senses (Chang, 1999). Scheduled timed release of materials may be possible; however, this reduced flexibility of study with progress dictated by the teacher may be inhibitory to some. Varying the style of presentation and type of materials, i.e. using multi-media methods, offers a wider range of learning experiences.

Kennedy (2004) talks about a triple learning environment, encompassing: the personal learning environment, the virtual learning environment, and the clinical learning environment. The personal environment can be the most challenging: maintaining the balance between activities, such as reading, and the student's personal commitments can be difficult. Life experience reflected in clinical practice can be valuable. By providing a flexible learning environment, this particular type of student can gain more from being able to 'log on' at times suiting themselves than from rigid classroom attendance. On the other hand, classroom attendance allows protected time away from the demands of home.

Set up costs may be significant. The development of new material takes time and the purchase, support and maintenance of web-based educational software such as Blackboard or WebCT can be prohibitive for smaller institutions. However, once created, the running costs of units are minimal. Tutor time may be significant but, due to the flexible nature of student/teacher engagement through email telephone and web-based discussion, it is difficult to quantify. The costs of technical support for students should not be underestimated.

Innovation

To attempt to overcome these difficulties and provide a specialist educational course in nursing assessment and management of leg ulceration (NM81), the University of Stirling has developed an innovative new approach.

A multi-media distance learning curriculum facilitates flexible, but structured, learning for nurses in their home locations, both in the UK and abroad. An online component allows remotely-based students to engage with each other and with teaching staff, through the use of discussion boards and chat rooms. This provides peer support, exchange of ideas, and reduces isolation. By using computer-accessed course materials, based in WebCT (Kaiden, 2002), the student can both download educational material at regular intervals and view images of clinical situations. Utilisation of clinical pictures online will facilitate learning through coloured images, and video clips will allow clarification of necessary clinical skills. Provision of these materials distributed in other formats, such as work books, may be prohibitively expensive (Jones and Macklin, 1997).

Course design

In this course there is a balance between minimal contact and distance learning. There are two compulsory attendance days: one introductory day comprised of sessions which introduce the electronic library, the course design and the virtual learning environment, WebCT (Kaiden, 2002); and one skill's workshop. Remote attendance is also required at allocated times (with a degree of flexibility within a set evening) for online tutorials.

From a distance, students work through seven units; the first being a 'getting started' unit which guides them through the course framework, the assessments, an internet tutorial and basic IT skills. Subsequent units guide students through anatomy, physiology, epidemiology, assessment, topical treatment, compression therapy, prevention of recurrence, and management issues. ▸▸

WHAT IS THE NEXT BIG THING IN WOUND CARE?

The course runs over 9 months, with one intake each year in September. Prerequisites for entrance are registered nurse status, access to a computer with web-browser, and an ability to navigate around Microsoft Windows or equivalent. The course is designed to minimise difficulties with different hardware and software. The IT entry requirements are access to: a computer, internet access, a web browser, and Java and Acrobat Reader software.

Material is presented in different ways. Activities encompassing reading, drawing, searching, discussing and practice-focused elements provide a variety of methods to learning (Fleming, 1995). For technical support, both help pages and a technical support discussion board are used. Where the discussion boards really support learning is in their ability to allow the students to pose questions and exchange ideas with their community of peers. This is also a powerful tool to prevent the problem of isolation so often experienced on distance learning courses.

Developing course materials

Online course development is known to be time-consuming, taking between 30 and 200 hours to develop one hour of material (Macleod, 2000). Materials need to be prepared before sessions and, for students to be able to study flexibly, all materials should be available at the course launch. Learning materials have been developed in an accessible format considering necessary modifications to materials to allow for clear screen visibility and ease of printing. Structuring of the package allows students to navigate easily between different areas of the WebCT package. Materials are presented consistently to encourage early familiarity with the learning package, and icons are used throughout to signpost 'event's such as a web link, essential reading or a learning activity.

Electronic library

Huge advances in library facilities, including electronic journal subscriptions, the NHS e-library and e-books have made physical access mostly unnecessary. Students can access much, if not all, of the required material from home. New advances such as TalisList reading list management software (TalisList, 2005) and AthensDA have allowed students to access journal papers and other resources. Material that is not available through electronic subscription may be obtained through HERON (Higher Education Resources on Demand), but can be expensive. For seminal papers that predate electronic journals, this may be a useful facility. Printing and photocopying costs are reduced by utilising the electronic library as much as possible so that students should not need to buy any textbooks or request inter-library loans. It is possible to highlight newly published papers to students immediately.

Competency framework

Distance learning theory alone would fail to meet the clinical standards required for a nurse to work competently with leg ulcer patients. A competency framework has been developed that students use to structure their clinical skills development. This outlines essential competencies required to manage leg ulcers, and completes the format of an integrated professional course accredited by the University and approved by the NHS Education for Scotland (NES). The competency framework may be completed by work-based learning within a student's own clinical locality, supported by a workshop held either within the university campuses, or elsewhere, by negotiation, if there are a number of students outside these areas. The skills workshop is an intensive day that focuses entirely on vascular assessment skills and bandaging. The course also offers optional negotiated short placements (1 or 2 days) to leg ulcer clinics at both a vascular and a dermatology department within Scotland.

Clinical supervisors

Two main factors are key to developing a successful experience — combating student isolation and aiding clinical skills achievement. Completion of the course is not just about theoretical knowledge, but also the ability to demonstrate clinical skills and expertise in practice (Ramage, 2004). Some of these skills could be described within a specially written competency framework, but

need to be assessed and sometimes demonstrated through role modelling in practice. Potentially, most areas will have a suitable clinical supervisor for the students, although they may be some distance from the student's base. Through a network of contacts across Scotland, and by conducting a research project with previous students, a number of experienced individuals have been identified as willing to help students in practice with their learning. These supervisors may work with students at negotiated times, and also provide a level of supervision that culminates in the signing of competencies as they are demonstrated and achieved.

Online tutorials

The experience of distance learning can be enhanced by tutorial support (Lawton, 1997). An entirely new concept within educational delivery is the utilisation of the chat room facility, within WebCT, to hold online tutorials. This encourages discussion and student interaction (Adams, 2004). Students are split into small groups of about five people, each group logging on to the website and the chat room at a pre-arranged time. The virtual classroom is then used. The students enjoy this, once they are used to the concept. It is only suitable for small groups at any time, being a very time-consuming method of delivery for larger classes (Ellenchild Pinch and Graves, 2000). Students can access the tutorial from any internet-enabled computer with Java installed.

It is possible to engage tutors to lead tutorials from afar: the only prerequisite, apart from speciality knowledge, is the ability to access the web. Some problems were encountered getting the requisite access for these external tutors to the eLearning system. One of the internal outcomes of NM81 has been that the University is now investigating ways to smooth this process.

Assessment

The course design is committed to aligned teaching (Biggs, 1999). It is important to align what students need to learn with what they are assessed on. Assessment must also be clinically focused. The concept of reflection-on-practice has been highly beneficial to the students and, as part of the assessment process, students are required to submit reflective accounts relating to the course work and the student's own personal experiences with patients. Without reading, learning and reflection on the course materials, the achievement of a pass in this type of assignment is impossible.

In addition, a case study examines the ability of the nurse to critically evaluate the patient pathway through the care trajectory. The competency framework is also included in assessment and a minimal credit is given for online attendance and participation at tutorials. These assessment strategies are not only accessible from afar, but offer sufficient depth to assess analytic skills of students at the level required for degree studies. Assignments are submitted electronically, and grades may also be returned electronically. There are also opportunities within the educational software (WebCT) for assessment utilising multiple-choice examinations and short quiz-type scenario questions. This would reduce the time the lecturer spends marking; however, it may limit individual feedback for students (Andersen et al, 1993).

Ongoing delivery

One key challenge is the technological problems (Attack and Rankin, 2002), often more prevalent in the first few weeks of student access to higher education programmes. The framework devised by Salmon (2002) highlights the importance of the role of the teacher in supporting students in the early stages of web access, which is perhaps the first necessary learning activity. This is quite unrelated to the topic area being studied. Salmon (2002) describes a five-stage framework for online learning, linking teaching and learning. It is clear that the initial stages of the course must be encouraging for the students. They need a great deal of support at this stage to help them engage with the materials and to prevent the technological aspect from destroying their enthusiasm for the subject studied. Each of the five stages (access and motivation, online socialisation, ▶▶

WHAT HAS BEEN 4,000 YEARS IN THE MAKING?

information exchange, knowledge construction and development) has been incorporated into the course in terms of the facilitatory role and this has worked well. Many initial queries relate to the technology and engagement with materials, and it has been helpful to have technological support.

Implications for the future

A specific risk with developing distance learning, is of course, tutor complacency. While not being challenged by face-to-face contact, it could be easy to slip into lassitude. The literature (Dearnley, 2003; Bangert, 2004) indicates that student learning is dependent on engagement with the teachers and prompt responses encourage learning. It is important to ensure that annual leave is covered by other members of teaching staff, who have an understanding of how the unit runs and a baseline knowledge of the material. It is possible for the tutor to be based some distance from the educational institute, making online courses easier to facilitate.

Helpline facilities have been developed during working hours. There is, of course, potential to develop better interaction using web-cameras, but so far this technology is not widely available, and is often unreliable within higher education institutions. There may be large cost-implications for students with this type of equipment. Cheaper equipment is available but can result in poor images and may reduce and undermine the learning experience. Video-linking is a possibility, but again the technology can be inhibitory. Dial-up connections can be slow and unreliable so high speed broadband may enhance real-time student interaction. This will help to overcome some technical difficulties and enhance course delivery.

Award

The nine-month course culminates in an award of 40 level 9 SCQF points for theoretical assessment and, combined with practice, achieves an award of a short professional course from the NHS Education for Scotland (NES).

Student evaluation

The third cohort of students has almost completed. Evaluation has been an essential part of the unit and students are encouraged to continuously comment on delivery as changes to web-based content can be made immediately. Specific tools to facilitate evaluation including an electronically submitted comments form and an online evaluation form are included in the course. Previous students have evaluated the course unexpectedly well, given the likelihood of technological glitches with the first intake. Many students identified the positive impact this unit has had on their practise, and all considered it value for money and something they would recommend.

Conclusion

This innovative new course has tackled the traditional problems associated with distance learning education, building on the success of its predecessor the Lothian and Forth Valley Leg Ulcer Management Course. This is a unique new development for post-registration nursing courses within Scotland and the UK. Students only need to leave their home base for two days, and this can be mostly flexible and negotiated individually.

Students gain transferable skills within a safe learning environment related to web searching, use of technology and learning to communicate in an electronic environment. Using the web also allows simple access to update or change the unit regularly. This course meets the clinical needs for competency-based training in leg ulcers, and provides a depth of theoretical knowledge, allowing nurses to schedule their own structured learning. It has minimised the limitations and maximised the potential for distance learning within this speciality area. **WUK**

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