

# The use of an e-learning infection prevention programme in the pre-registration nursing curriculum

C Pellowe<sup>1\*</sup>, J Adams<sup>2</sup>, S Elliott<sup>3</sup>, K Murrell<sup>3</sup>, D Cox<sup>3</sup>

1. Richard Wells Research Centre, Thames Valley University, Paragon, Boston Manor Road, Brentford, Middlesex TW8 9GZ, UK.  
Email: carol.pellowe@tvu.ac.uk

2. Blended learning Unit, Thames Valley University, Paragon, Brentford, Middlesex, UK

3. Praxis Laboratory, Thames Valley University, Paragon, Brentford, Middlesex, UK

\*Corresponding author

Accepted for publication: 28 December 2009

Keywords: education and training, e-learning, infection prevention and control, students

## Abstract

**T**he infection prevention e-learning project initiated by the NHS University was launched in September 2005 and is now administered by the NHS Core Learning Unit. It was intended to be the definitive infection prevention programme for all NHS staff both clinical and non-clinical; however, a higher education institution saw its potential for use in the pre-registration nursing programme and trialled it in the Common Foundation Programme (CFP). This article describes the use of the programme in the CFP and an evaluation of the students' experience of e-learning.

## Introduction

The infection prevention e-learning project initiated by the NHS University was launched in September 2005 and is now administered by the NHS Core Learning Unit (CLU). It was intended to be the definitive infection prevention programme for all NHS staff both clinical and non-clinical and was based on the epic guidelines (Pratt et al, 2001). However, lecturers at a higher education institution having been involved in the development of the programme saw its potential for use in the pre-registration nursing programme and trialled it in the Common Foundation Programme (CFP). This article describes the use of the programme and an evaluation of the students' experience of e-learning.

## The e-learning programme

The programme is made up of three parts. Parts 1 and 2 *Infection Prevention and You* are clinical and non-clinical versions of the same topics and cover:

- introduction to healthcare-associated infections;
- risk to patients;
- protecting patients and yourself.

The third part *Principles of Infection Prevention* explains the epic guidelines in more detail with sections on:

- hand hygiene;
- personal protective equipment (PPE);

- waste and sharps;
- environmental cleanliness.

## Use of blended learning in the curriculum

The suite of programmes that make up the *Infection Prevention* programme are accessed via the NHS Core Learning Unit's website ([www.corelearningunit.nhs.uk](http://www.corelearningunit.nhs.uk)) with a username and password obtained after first registration. The programmes are delivered through a learning management system that has tracking capabilities to monitor the level of engagement, completion rates and scores of registered users. Evidence of completion can also be confirmed by individual learners printing progress reports and end-of-programme certificates.

The tracking feature supports delivery in an e-learning environment where learner engagement tends to be self-paced and self-directed. This enables learners to resume the programme at the point where they had previously left off as well as providing individual and group data on time spent online and completion rates. Self-assessment is built into the programmes through multiple choice questions, feedback and additional offline activities. Other design features aimed to promote motivation and learning include the use of video, audio, animation, graphics, summaries, review of learning, and a high level of interaction for each screen.

The University has adopted a blended learning approach to curriculum development and delivery. There are many definitions and interpretations of blended learning that encompass flexible and personalised modes of delivery, providing a rich mix of learning opportunities through a university-wide virtual learning environment (TVU, 2008).

Vaughan and Garrison (2008) expand on these definitions to highlight the learning, teaching and assessment decisions that inform the selection, sequencing and integration, in other words the "blend", of complimentary and thoughtful learning experiences. They argue that to reap the learning and teaching benefits that blended learning offers it needs to be formulated and contextualised within a wider educational framework. They have used a community of inquiry framework

where the focus is on engaging students in critical discourse and reflection. At Thames Valley University (TVU) the *Infection Prevention* programmes have been embedded into an inquiry-based blended learning framework within the pre-registration nursing curriculum. Learners develop their knowledge and practice of infection prevention measures between classroom sessions, practical workshops, the virtual learning environment and e-learning resources, culminating in formative assessment through authentic patient care events. The incremental learning sequences are student-centred, activity-based and have been designed to relate to and reinforce previous learning. The sequences exploit the characteristics of each learning environment and provide social and collaborative learning opportunities while catering for different learning styles. In this context the *Infection Prevention* programmes are used as both a learning resource formally integrated into the blended learning framework and as a standalone, self-directed resource for review and revision.

### Use of the CLU programmes with simulation to support the development of clinical skills

TVU prepares students for all four branches of nursing. During the first year all students' study the same content in the CFP although they have branch-specific placements. During the second half of this year students have a 13-week clinical placement. The 6 months leading up to this are spent preparing the students for safe practice and gaining an appreciation of health care generally in relation to their specific branch of nursing. Whilst students do not have a clinical placement during the first 6 months, they are exposed to practice, practitioners and patients in a variety of healthcare environments over the course of 30 days that are interspersed in blocks of 5 days throughout the University-based time.

As described above the pre-registration nursing programme takes a blended approach to learning. During the University-based time students cover the content in a variety of ways: classroom-based sessions, practical skills-based sessions and through a selection of online resources including those from the CLU. At three points during their study all students take part in a simulated scenario. Realistic patient care events are recreated in the simulated environment using actors and/or patient simulators that allow students to apply and contextualise the skills and knowledge they have acquired and receive feedback on their progress.

Students are required to have completed the *Infection Prevention* programmes and provide lecturers with a certificate as evidence of completion by week three of their programme, which is when they are first exposed to practice. A record is kept for each student that the *Infection Prevention* programmes have been completed and the student then retains the certificate. In addition to completion of *Infection Prevention* students undertake classroom-based seminars related to microbiology, the spread of infection and the immune response to infection. The practical sessions enable students to learn and practise skills, such as hand hygiene, disposal of waste and sharps and the use of PPE. The culmination of this blended approach comes in the simulation exercises when students are required to demonstrate and apply their skills and knowledge to a patient care context. This is a developmental exercise for the students where they are expected to wear their uniform and their lecturers and qualified nurses from the field of clinical practice relevant to the student's chosen branch of nursing provide feedback.

The principles of infection prevention underpin all of the practical-based sessions and simulations and therefore students are constantly reinforcing and practising the application of theoretical content.

Other CLU programmes are used in a similar way throughout the first 6 months of the course, including health and safety, manual handling and nutrition. As the students progress through the 3-year

programme they are required to revisit the infection prevention programme as well as some of the others in order to update and reinforce the knowledge and skills gained during the first year.

### The evaluation

The purpose of the evaluation was to establish:

- the ease of access to the programme;
- the use of the materials;
- the relevance of the content to the students' stage of training.

All students commencing training in September/October 2008 and March 2009 were included in the evaluation which took place over a 6-month period starting in January 2009. Advice was sought from the Chair of the Faculty Research Ethics committee regarding the need for ethical approval but as this is an evaluation of the student learning experience, none was required.

A short questionnaire was constructed using Likert-scale questions and posted on Blackboard, the University's e-learning platform. An information sheet explaining the purpose of the evaluation was also posted on Blackboard. On completion of their learning experience, students were encouraged to complete the questionnaire online.

### Results

Of the 495 students completing the programme, 282 questionnaires were completed, representing a 57% response rate. Descriptive statistics were performed on the completed questionnaires and the results are as follows.

#### *Access to the programme*

Registering and accessing the programme was reported to be straightforward by 88% ( $n=248$ ) of students. Similarly 91% ( $n=256$ ) were able to select the sections they needed without difficulty. Accessing the programme outside of the University was reported by 87% ( $n=244$ ) and 62% ( $n=176$ ) reported no difficulty in working through the programme. In addition 84% ( $n=238$ ) acknowledged that they were aware they could revisit the programme at any time during their course.

#### *Value of the programme*

Eighty eight percent ( $n=247$ ) of students reported completing all of the requisite sections of the programme. Ninety four percent ( $n=264$ ) either strongly agreed or agreed that they had enjoyed this form of learning. The relevance of the programme to the pre-registration programme and to their particular stage in training was acknowledged by 94% ( $n=264$ ) students. As a result of undertaking the programme, 97% ( $n=272$ ) reported being more confident in their understanding of infection prevention and similarly 96% ( $n=271$ ) reported applying the knowledge gained from the programme to practice.

### Discussion

This evaluation offers a snapshot of the value of the programme, and the responses clearly demonstrate that students who use the programme as part of their pre-registration nursing programme found it easy to use and relevant to their training. To see so many accessing the course away from the University, although we did not inquire as to where or when, suggests that students benefit from the flexible access independent of time and place. It would have been interesting to know in more detail the technical difficulties students experienced. The reported enjoyment derived from this form of learning should encourage educational institutions to explore where this could be further used. Although we have no way of checking reported increased confidence following completion of the programme or the application of new knowledge gained being applied in practice, we could follow this evaluation up with a study of the perceivers' perception of these

students' infection prevention knowledge and practice following completion of the programme.

### **Conclusion**

Although not originally intended for pre-registration nursing students, we have found the e-learning infection prevention programme to be a useful additional resource in skills acquisition especially when integrated into a blended learning framework. As the CLU programme expands to include more clinical modules such as vascular access devices and urinary catheters, this form of learning may become even more significant in the pre-registration programme.

### **Conflict of interest statement**

None declared.

### **References**

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