

A Nurse Prescribing Programme Incorporating e-Learning

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Abstract: In order to become a UK Nurse Prescriber, a First Level Registered Nurse must undergo an approved University based educational programme, which consists of theory, and a period of practice supervised by doctors. The Nursing and Midwifery Council (NMC) requires nurses undertaking this programme to have some formal university attendance and to be assessed in practice. Successful students are recorded on the national NMC register. Since October 2004, the University of Winchester has used blended learning incorporating e-learning for the delivery of the Nurse Prescribing Programme using online material developed by Emap Publishing in conjunction with the University of Stirling. This paper discusses the effectiveness of the programme and the evaluation of the initial six cohorts (127 students) who studied the Nurse Prescribing Programme undertaken by e-learning through the University of Winchester.

Keywords: Nurse prescribing, evaluation, e-learning, designated medical practitioner

1. Introduction

The traditional belief about nurse education since its inception has been that nurses belong to a homogeneous group and that all its members acquire knowledge and skills in a similar way. Traditionally, nursing courses have tended to be similar in content and delivered in a classroom by a tutor acting sometimes as facilitator, but more often as pedagogue (Doster, 2004). Such an approach is not always appropriate and much more consideration is now being given to students' reasons for undertaking a course, how they learn best and individual work experiences coupled to the efficient use of accreditation of prior experiential learning (AP(E)L). Adult learners are motivated by many different factors, and develop their own unique learning styles which vary according to context, task and the age of the learner (Figueira, 2006). In addition, the opportunity to choose how to receive and engage with course material, the pace at which that material is delivered and the flexibility to apply material gradually in the workplace is very appealing to some people. It has been suggested that educational programmes have most impact when they accommodate individual learning styles through the provision of different kinds of learning opportunity, and provide sufficient and immediate feedback (Dobrovolny, 2003).

The Medicinal Products: Prescribing by Nurses Act, 1992 transformed the role of UK nurses in the management of drugs. The introduction of independent extended prescribing in 2002 (Department of Health (DoH), 2001) and supplementary prescribing in 2003 (DoH, 2002) has expanded the prescribing powers of the nurse further. By the end of 2006 there were 10,000 trained nurse prescribers in the UK (Courteney 2006). To respond to these initiatives the University of Winchester introduced in 2004 an Independent, Extended and Supplementary (IES) Nurse Prescribing Programme as a 40 credit module for qualified nurses. This Programme could be undertaken as a module of the BSc(Hons) Professional Practice in Health and Social Care Programme (*a distance learning programme*) or independently as a standalone professional module. The key point about this IES Prescribers' Programme was that it used a blended learning based upon a core of e-learning materials. The Programme allowed a high level of flexibility designed to meet individual students' needs and reduced the number of direct contact days at the University including travel overheads. The IES Nurse Prescribing Programme is successful and was commended by the UK Quality Assurance Agency (QAA) in October 2006. This paper describes the Programme, how it has been implemented using e-learning techniques and the results of its ongoing evaluation.

2. Nurse prescribers' IES learning programme

In England, the taught IES Prescribing Programme normally requires 26 days attendance at a university. Using blended learning techniques meant that attendance at this university was only required for 6 days. In October 2006, this was extended to 8 study days to meet new NMC standards. There are 3 intakes a year and the Programme provides the students with academic input related to practice through lectures, seminars with pharmacists, nurse prescribers and other relevant healthcare professionals. There are also periods of practical work based learning supported by a core of e-learning material (Burgess et al, 2006).

2.1 The Emap online IES nurse prescribing programme

The IES Nurse Prescribing Programme was developed by Emap in 2004 in conjunction with the University of Stirling and implemented within the Winchester University Virtual Learning Environment (VLE) and delivered

on demand over the Internet. The University of Winchester was the first Higher Education institution in England to gain approval from the NMC to deliver this 'online' programme, which commenced in October 2004 with students recruited from all over England. The web pages contain structured materials with further reading prompts and tasks to guide the students. Example pages are shown at Figures 1 and 2.



Figure 1: The homepage

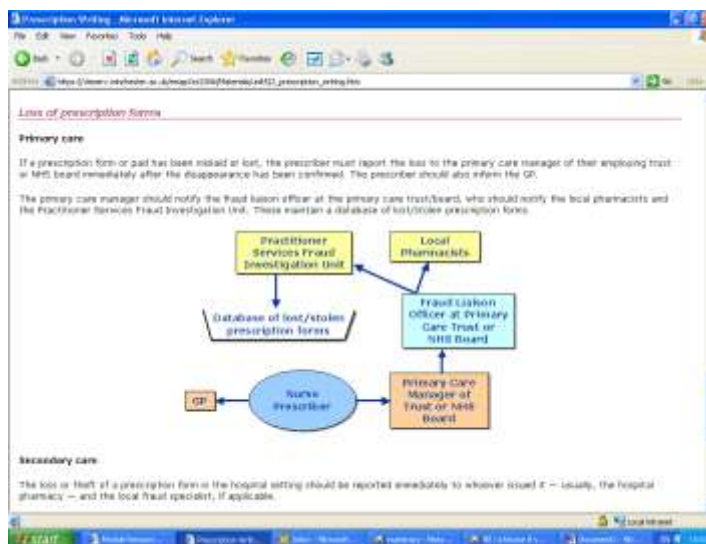


Figure 2: An example page

2.2 Nature of the student population

This distance learning programme is ideal for nurses who are unable to take time away from their work base to attend a traditional course of 26 days. Most of the students are employed on a full time basis, and are in a position of some responsibility when they undertake this part-time course. Also they often have families and a home to run. Finding time for study can be very difficult, and requires skilled time management. This flexible online programme enables employers to be more flexible in the way they allocate study time to students, something which is now subject to an NMC standard and which must be audited (Hart et al, 2005). Initially the majority of the nurses were from the community sector and then from the NHS hospitals. More recently there has been an increase in the number of students from the armed forces, the private sector and the self employed.

2.3 Student use of information technology

The IES Programme requires the nurse prescribing students to have the basic skills and knowledge to use a personal computer, the Internet and online learning materials. A minimum hardware specification is required to access the e-learning material and recommended specifications are supplied in leaflets, along with guides to computing and studying away from the University.

The nurse prescribing students are set an exercise to determine the level of their IT skills and there is considerable variation in the IT skill levels of the students. Therefore, all students are provided with the free opportunity to undertake the European Computer Driving Licence (ECDL) to improve their IT competency.

Students are required to confirm and describe their access to IT facilities at home and in the workplace. For workplace facilities, specific permission for use during these studies is required and the level of availability must also be confirmed. For example a student was overheard to say they could only access the learning material once a week because the location of her job had changed and she was peripatetic across clinics where she did not have Internet access. As a result of this the IT availability for students is now reconfirmed at regular intervals. In some cases prospective students demonstrate that they have no access to IT at home and/or in the workplace. Following discussion some of these prospective students have been advised to consider undertaking a traditional course at another institution.

Students are introduced to the e-learning material through a log on exercise at the start of the IES Programme during the two day induction period. The log on exercise is supported by the VLE specialist, Programme Leader and an IT technician. During this session the students are given advice on how to work through the IES Programme in relation to their study days and assessment criteria. Students leave the session having successfully accessed the learning material twice and undertaken a small test to demonstrate that they can find a certain section of the learning material and leave messages. As a confirmatory test all students are asked to access the IES Programme remotely within 24 hours and leave a message.

The University of Winchester VLE includes a 'café forum' area where students can communicate and exchange information. Programme tutors also use the VLE to distribute other resources and information to students such as study day information, standard forms and handbooks. A notice board specific to the IES Programme keeps students in touch with developments. Support for passwords, technical queries or training is handled through a first line support 'IT helpdesk', supported by a second line VLE specialist.

There is electronic monitoring of students' access to the VLE and so it is possible to determine the frequency of students' access to the learning material. Of interest is the University policy and VLE requirement to re-key the password at the 3 month point. If a student had not been accessing the learning materials for a period then this change could be missed, so as an exception the password validity period for nurse prescribing students has been increased to cover the 6 month length of the Programme.

2.4 Tutorial support

Students are allocated to tutors geographically dispersed across England and, where possible, students' and tutors' nursing specialisms are matched. Tutors are the students' initial point of contact for all Programme matters and problems and tutors liaise with the Programme Leader based at the University. The focus of learning is related to students' areas of nursing specialisms especially during their 12 days in practice. However, students are also encouraged to widen their prescribing experience outside their normal place of work by working alongside other prescribing professionals. Students must negotiate a minimum contact time of 10 hours with their tutors during the 6 month period as well as the method of communication to be used (face to face via group or individual tutorials, telephone, or email.) Tutors not only provide personal support, but advise students about academic assessment and give feedback on assignments and examinations. The strength of this tutorial support has been a major success factor in this Programme.

2.5 Designated Medical Practitioners (DMP) – doctors

The first co-ordination meeting between the DMP, the student and the tutor, at the student's place of work, covers the learning outcomes of the course, how the student is to be assessed in practice, and how the documented evidence is to be created and maintained. The DMP role is primarily that of a mentor and assessor of competency during the course including the 12 days of supervised practice. To widen a student's experience, the DMP may delegate this responsibility to other health care professionals who are involved in prescribing.

2.6 Student assessment

The assessment of the IES Prescribers' Programme consists of a:

- Written examination with a NMC standard pass mark of 80%.

- A mathematics test (100% Accuracy required) was implemented in May 2006 to meet NMC standards.
- 3,000 word reflective essay.
- Evidence based portfolio of their 12 days supervised practice demonstrating their competence, which must be verified by their DMP including examples of prescribing episodes.

2.7 National registration of successful students

The University notifies the NMC about the students who complete the Programme successfully. The students are then sent a registration form which they must complete and return with a fee to the NMC. Their names, already recorded on the national NMC Professional Register, are then annotated as 'Nurse Prescribers'.

3. Evaluation method

This Programme is subject to a long term evaluation process which will examine not only the effectiveness of the Programme in preparing qualified nurses to become prescribers, but also the effectiveness of e-learning as a learning methodology as compared to traditionally taught courses. The evaluation of the Programme has been carried out using two questionnaires presented to students at the end of the study period. Questionnaire 1, devised by the teaching team, requested the students to provide responses to assess the overall Programme. Questionnaire 2, devised by Emap, requested the students to focus on assessing the utility of the e-learning materials.

4. The initial evaluation of the prescribers programme

The results of Questionnaire 1 over 6 student cohorts are shown by the graph at Figure 3. Overall the Programme was assessed satisfactory to excellent with the majority of the students evaluating the Programme as 'good'.

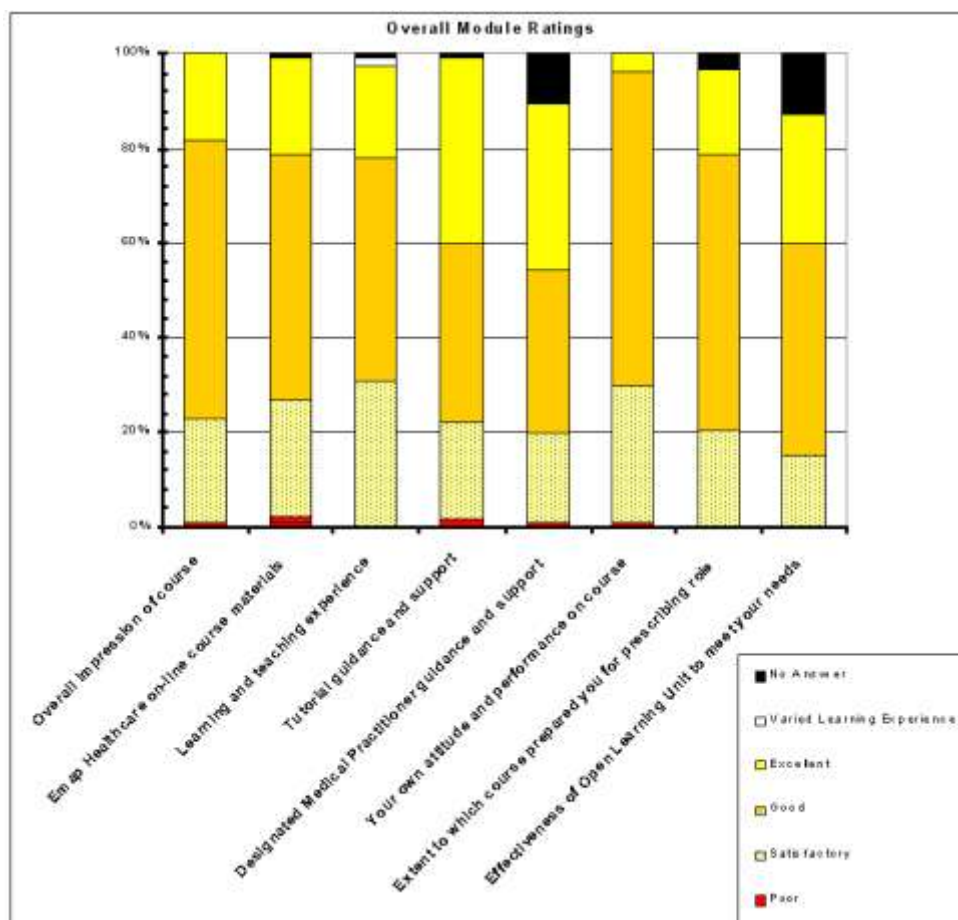


Figure 3: Questionnaire 1 - Overall module ratings based on 127 students – 6 cohorts (Question topics are summarised on the graph)

The results of Questionnaire 2 (Emap Questionnaire) which requests the students to focus on assessing the utility of the learning materials are shown at Table 1. A number of students belonging to the early Cohorts 1-3 identified the following issues:

- Familiarity with distance learning Techniques. Despite the students not being familiar with distance learning techniques and the level of personal self discipline and commitment required, the majority liked the student directed flexible approach, where they felt in control and could study at their own pace and, more importantly to them, it fitted around their work, home and social commitments. However, the students, who gave 'poor' ratings during evaluations, were found to have had no previous experience of distance learning techniques and were expecting far more tutorial support than was available. As a result the pre-course information was expanded to explain the requirements of distance learning in more detail and enhanced tutorial support was provided on a flexible basis.
- Referencing. Some references were reported as being out of date. This was corrected.
- Internet links. It was reported that there were too many distracting links and some Internet links did not work. This was corrected.
- Online Tests. It was proposed that there should have been online tests after every unit as well as including mock examinations and other examples of assessment. Online tests have now been included.
- Pharmacological background material. It was proposed that some of the pharmacological aspects should be expanded, although the online information was supported by lectures on Pharmacology which were rated as very good. The amount of Pharmacology in the online material had been judged by the Emap development team to meet the necessary level of knowledge, however, responding to the feedback, Emap acknowledged that further development was required.
- Off-line Study. The online materials were criticised by a small number of students in that they were also expected to undertake library searches and read hard copy texts. One student felt that all materials should be online. However, it is considered that undertaking library searches ensures the students develop and maintain this skill and no changes have been carried out in this area.

The evaluation questionnaires at the end of the Programme period and students' comments on the learning material were passed to Emap for assessment and action. Emap was responsible for carrying out changes to the programme study materials. The new NMC Standards for nurse prescribing were included in the Programme as were any changes to prescribing laws and formularies. The issues above were assessed, discussed at the annual co-ordination meeting and corrected as required. The issues above were not identified again by cohorts 4-6.

From October 2007 Emap will no longer be involved and this work will be carried out by the University of Stirling, the initial designer of the Programme.

5. Discussion

5.1 Learning and teaching experience

The Programme requires compulsory attendance at University for 8 days over a period of 6 months, which is one or two days per month coupled to about 170 hours of study time and 12 days of work based experience and assessment. The NMC has expected employers to allow students to have additional time off work to help meet the 170 hour e-learning commitment. However, some students have found that their managers have not recognised the need to provide them with additional study time to enable them to study the online material and prepare for assessments time beyond the 8 university days allocated. In October 2006 the NMC's new standards required all nurse managers to provide student nurse prescribers with 10 days worth of protected learning time. Despite this measure and fact that the students should be at Level 3 – degree level (*independent learners*), there is still a considerable time management problem in negotiating when to take the 10 days worth of protected learning (*about 80 hours – 3 hours per week*) and how to earmark the balance of the study time (*about 90 hours – 3-4 hours per week*) in their own time. There is little scope for slippage because of the frequency of university attendance. The distance learning approach provides for considerable flexibility, but it does require dedication, commitment and routine. Students must also be

disciplined in their studies and not be distracted by the Internet into using up valuable study time investigating matters that are not directly relevant to the Programme.

Table 1: Questionnaire 2 - Summary of Emap evaluation questionnaire

Modules (Started Oct 04-Oct 06 - % of 127 students)	Very Poor	Poor	Satisfactory	Good	Excellent
Foundations of Prescribing Practice					
Content			31	59	9
Relevance to practice		1	29	61	9
Learning experience			31	61	9
Easy to remember			36	57	6
Clinical Pharmacology Including the Effects of Co-morbidity					
Content		2	22	63	13
Relevance to practice		2	24	61	13
Learning experience		2	26	61	11
Easy to remember		2	32	58	8
Prescribing and the Wider Healthcare Context					
Content			28	64	8
Relevance to practice			28	63	9
Learning experience			30	63	6
Easy to remember		1	31	62	6
Prescribing Partnerships					
Content			33	58	9
Relevance to practice		1	30	61	8
Learning experience			35	57	7
Easy to remember		1	39	54	6
Prescribing in Practice					
Content			29	65	6
Relevance to practice			28	66	6
Learning experience		1	30	64	6
Easy to remember			34	61	5

5.2 Tutorial guidance and support

The IES Nurse Prescribing Programme is based on a significant amount of practice and work based assessment and this relies on a backbone of tutorial support. Tutorial requirements of students will vary considerably and the level of tutorial support is very much a matter of negotiation between the tutor and individual students. In general, the tutors have had 'good' to 'excellent' reviews by the majority of the students. However, while all tutors are required to carry out a set level of student contact and this is audited, it is clear that there is some variation in the proactivity and style of tutors. One of the overt aims of the staff development programme has been to encourage tutors to share and adopt a best practice approach and this has been facilitated through:

- pairing tutors with separate distance learning and prescribing backgrounds to provide mutual support,
- tutors' study days where the e-learning material is discussed in detail which encourages tutors to work through the material, so they are familiar with it,
- twice yearly meetings with agendas based upon spreading best practice where learning materials, student results, students' learning and student support issues are discussed,
- three marking and moderation meetings per year.
- peer reviews of tutors advising students so as to develop tutors' skills in this area,
- the Programme Leader accompanying new tutors to first visits with DMP.

As the IES Nurse Prescribing Programme has a significant e-learning component the tutor also provides online support with queries. In fact any tutor, with the right experience, can answer students specific queries online through the 'café forum' and this information is displayed for all students to see.

5.3 Designated medical practitioners (DMP)

The NMC and the IES Nurse Prescribing Programme require a significant contribution by DMP who must assess the professional competence of students. Students have in general found that DMP have supported their learning experiences with enthusiasm and commitment, and mostly rated the DMP support as 'very good'. This rating has improved with time, which may reflect the developing experience of DMP working with nurse prescribing students.

DMP support is to some extent outside the control of the University. However student success is linked firmly in the relationship between the DMP and the student as well as in the efficiency advantages nurse prescribing brings to the workplace. DMP are not provided with direct access to the e-learning materials, but the IES Nurse Prescribing materials have been validated nationally and conform to National Prescribing Centre Guidelines and therefore there is high confidence in them. However, DMP still have to be prepared to take on the supervisory task and this is carried out through:

- the DMP Information Pack which is sent to the student with the Application Form,
- the IES Nurse Prescribing Programme Documentation Pack (also sent to the student), which covers assessment, portfolio development and the contents of the Programme Handbook,
- a visit by the student's personal tutor to discuss the documentation and assessment ensures the DMP is familiar with the learning outcomes and the role in achieving them.

Despite this there have been some disappointments when some DMP found that they did not have the capacity to supervise prescribing students or appreciate the amount of work involved.

In investigating students' reflections about DMP support, it confirms that nurse prescribing is more than just learning to prescribe drugs. Whatever the level of DMP commitment to support students, nurse prescribing has changed the relationship between the DMP and the prescribing nurse. Nurses now have the knowledge and skills to share their concerns with DMP, when they might even disagree in the prescription of a particular drug. Being closer to the patient they may even understand the impact of drugs on a particular patient better than a DMP. The e-learning material covers the knowledge element and the study days cover the skills needed to act in this new role. Some of the assignments have been excellent expositions about these issues and these have contributed to the development of study days. However, the professional relationship between DMP and the nurse prescriber roles requires further research.

5.4 Student's perspective of attitude and performance

The majority of the students were experienced nurses (*10 years or more*) mostly in senior nursing positions. Most of the students elected to undertake the course to expand their knowledge and skills in an area of expertise that traditionally has been held by doctors and dentists. Some students had been directed to undertake this programme of professional development, so as to meet the changing demands of their nursing jobs. However, all students identified improvement to patient care as a major motivator.

The majority of students choose this distance/e-learning Programme to fit the study requirement into work demands and life style commitments. The Programme is a demanding option. Level 3 – degree level students are expected to be self-directed, be able to assess their own performance and have an insight into their own academic strengths and weaknesses. Students have reported being more in control of their learning and would choose this form of study in future. The vast majority of students would recommend the Programme to other nurses.

An advantage of using e-learning has been that the students have been developing and fine tuning their IT skills and that this has proved a bonus in their work. Some students have developed their IT skills to such an extent that they have felt motivated to continue with their studies at a higher level using the distance/e-learning route.

Some students gave poor ratings with the reason that the Programme and the online material were too generic and lacking in enough detail to support different nursing specialisations. The pre-course information and the NMC standards now make it clear that the preparation for nurse prescribing is generic. However, to address students' concerns one of the study days is now allocated to meeting the needs of the various nursing specialities.

5.5 Preparation for role

The Programme Team is about to start following up on students who have been carrying out the prescribing role for 12 months, particularly now that some past students have become lead prescribers in their own organisations. The purpose of the follow up study will be to ask the students to reflect critically about their preparation for the prescribing role using the distance/e-learning techniques and their real job experiences.

6. Conclusions

This has been an evaluation of 127 students undertaking a prescriptive and bounded e-learning programme; however some useful general conclusions can be made:

- This e-learning programme has demonstrated the advantages over traditional courses where students are unable to take time away from their work base to attend a traditional course and where most of the students are employed on a full time basis. Despite the majority of the students not being familiar with distance learning techniques, the level of personal self discipline and the commitment required; most students liked the student directed flexible approach, where they felt in control and could study at their own pace and, more importantly to them, it fitted around their work, home and social commitments. However, as with all professional studies, nurse prescribing students must be committed to the task and managers must provide the protected and auditable study time which has been negotiated. The e-learning approach provides for considerable flexibility, but it does require a dedicated routine.
- It must be expected that there will always be a considerable variation in the IT skill levels of the students and there should be parallel arrangements to develop their IT skills, so they can achieve the competency and have the confidence to use a computer before starting an e-learning programme. The positive feedback process which enables students to signal back to either their tutor or programme supplier that they have logged on to the material online successfully has been found to be useful. It is also necessary to ensure alignment of University computing policies with the needs of an e-learning programme particularly where the provision of e-learning is a relatively new concept for university computing support staff. Finally, an advantage of using e-learning has been that the students have been developing and fine tuning their IT skills and that this has proved a bonus in their work. Some students have developed their IT skills to such an extent that they have felt motivated to continue with their studies at a higher level using the distance/e-learning route.
- Strong tutorial support is an essential part of the IES Programme. It provides students not only with a point of contact, but with advice on academic assessment with feedback on assignments and examinations. It has been found essential to align the styles of tutors and considerable effort has been required in pairing and supervising experienced tutors with less experienced tutors, tutor training days and study days to develop consistency and reliability in the provision of advice and assessment.
- It has been found that there needs to be a regular review of the learning material and there must be mechanisms for modifying it in a timely manner on the basis of feedback from evaluations, mandatory changes to prescribing laws and adjustments to the formularies. A more frequent update process is now being considered in association with the University of Stirling.
- There has been a debate about the balance between how much of the learning material should be presented online, and how much directed or undirected research should be left to the student. It has been concluded at this stage that undertaking library searches ensures the students develop and maintain this professional enabling skill. On the other hand students' time must be used efficiently. Students must be disciplined in their studies and must not be attracted by the Internet into using up valuable study time investigating matters that are not directly relevant to completing the Programme.
- Nurses now have the knowledge and skills to share with the DMP their concerns when they may disagree in the prescribing of a particular drug. Nurses tend to have more in depth knowledge about some patients and they may even understand the impact of drugs on a particular patient better than a DMP. However, the professional relationship between DMP and the nurse prescriber roles requires further research into this whole new area of practice.

Overall, the students undertaking this e-learning Programme have reported being more in control of their learning and would choose this form of study in future. It is satisfying that the majority of students would recommend the Programme to other nurses.

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