A TEACHING AND LEARNING OBSERVATORY IN NURSING PRACTICE: THE USE OF VIDEOCONFERENCING IN NURSE EDUCATION

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Abstract

This paper describes the process of setting up and implementing a Teaching and Learning Observatory (TLO) in nursing practice. A TLO uses videoconferencing to connect learners in a classroom with others at a remote site and has been used successfully at the University of Nottingham to connect student teachers with teacher trainers. The model was adopted in the School of Nursing, building on our expertise of involving service users and carers in nurse education.

Acknowledging the international prevalence of diabetes, we wanted student nurses to learn from the perspectives of service users, carers and a diabetes nurse specialist about the life-changing issues faced by patients with diabetes starting insulin for the first time. It was decided that a TLO would be an appropriate medium to meet this aim.

Access to patients and carers in a diabetes clinic in the United Lincolnshire Hospitals Trust in the United Kingdom was gained through a diabetes nurse specialist who ran health education groups for people with diabetes. A letter was sent to the patients informing them of their appointment at the clinic and the involvement of the School of Nursing. An information sheet on videoconferencing and the process to be followed was enclosed. Patients were given the opportunity to participate in the student learning, but if they declined an alternative appointment would be offered.

Sixteen student nurses in the second year of the Diploma/BSc in Nursing, a lecturer, four patients, one carer and a diabetes nurse specialist participated in the TLO. An IT technician supported the process by liaising with the Trust's IT department, setting up the equipment and being present on the day.

In preparation for the session, the students were asked to complete a workbook on diabetes management. During the morning the students received a lecture on the biological basis of diabetes. In the afternoon a lecture on 'insulin initiation' was given, which included the importance of establishing partnerships between patients and health professionals. The students were introduced to the concept of a TLO and the process of engaging in the exercise.

At a pre-determined time a video link was made between the classroom and the clinic. The students observed the skills of the diabetes nurse specialist facilitating the group and noted the questions asked by the patients. At the end of the group session, the students asked questions and the patients,

carer and nurse responded to give the students an insight into the thoughts, feelings and experiences of people with diabetes. The patients were given a 'thank you' letter in recognition of their contribution to nurse education.

An evaluation of the TLO indicated that although improvements could be made in the sound quality, the students had enjoyed this method of learning and had found that their knowledge about the impact of taking insulin had increased. It is anticipated that the exercise will be repeated and developed in other areas of nursing care to enable students to develop their practice through the use of videoconferencing.

Keywords
Videoconferencing, Innovation, Teaching and Learning Observatory, Diabetes, Nurse Education, User and Carer involvement.

INTRODUCTION
The aim of pre-registration nurse education in the United Kingdom is to prepare students who are fit for practice at the point of registration [1], [2] to enable them to be registered with the Nursing and Midwifery Council (NMC) in order to gain employment in various fields of nursing. An essential part of the nurse education programmes is to facilitate the linking of theory to practice. So the challenge for educators, allocation managers and placement unit staff is to ensure that sufficient learning opportunities are available for students to learn from experienced practitioners. An integral feature of University of Nottingham programmes for student nurses is the attention paid to the involvement of service users and carers, who are seen as important partners in developing and delivering various aspects of nurse education. Normally student nurses receive teaching sessions in the classroom over a period of weeks and then work in a supernumerary capacity in placements. However, with the increasing use of technology in teaching and learning, and with the support of the Visual Learning Lab at the University of Nottingham, an opportunity arose to use videoconferencing in an innovative way to enable students to link theory to practice. This paper provides background information on the Visual Learning Lab, a description of student nurse learning at the University of Nottingham, School of Nursing, a brief theoretical perspective on learning styles, the importance of user and carer involvement and the need for students to learn about diabetes. It then describes how a Clinical Practice Teaching and Learning Observatory was implemented to help students to learn about diabetes, both in theory and from the perspectives of a diabetes specialist nurse who was leading a patient education group, and from patients who were about to start taking insulin for the first time.

VISUAL LEARNING LAB
The Visual Learning Lab (VLL) [3] is a learning, teaching and research centre which supports a range of projects across the University of Nottingham in the United Kingdom. The VLL was established in the School of Education in 2007 as one of the Centres for Excellence in Teaching and Learning (CETLs) funded by the Higher Education Funding Council for England (HEFCE) to support innovations in visual learning. Visual imagery can play a powerful role in accelerating learning and the range of technologies providing visual imagery is very broad. For example, the School of Biosciences uses a unique electronic microscope that allows real time images to be captured, aiding the teaching of plant cell structure and function. The School of Geography has been engaged in a 'Learning Landscapes' project using 3D visualisation and interactive technologies to create a virtual landscape to be used by students to design and explore different land management options. The School of Veterinary Medicine and Science uses videoconferencing to allow live demonstrations of surgery on animals for large groups of students. Whilst the focus of each School at the University of Nottingham is vastly different, the common theme is to make learning for all students an enjoyable and stimulating experience.

STUDENT NURSE LEARNING
Three thousand five hundred students study on a full-time and part-time basis in the School of Nursing which has five education centres across 3000 urban and rural square miles, making this School the largest in the United Kingdom. Students are recruited from a variety of backgrounds. For example, they may enter a course straight from secondary education at age seventeen and a half or after undertaking another university course. They may be more mature people wanting a change of career or people who have worked in health settings as care assistants. There are several nursing courses at the University of Nottingham which candidates may choose to undertake and will be dependent in part on their educational qualifications. The courses include a three year Diploma/BSc, a four year Master

of Nursing Science (MNursSci) and a shortened Graduate Entry Nursing course. Prospective students for the Diploma/BSc nursing course need to have achieved the equivalent of five GCSEs (General Certificate in Education) at grade 'C' or above, which must include mathematics and English language to gain a place on the course.

Students on the Diploma/BSc course undertake a Common Foundation Programme (CFP) in the first year and then move into the branch of nursing they have selected prior to the start of the course for years two and three. Themes running through the CFP on which the students are assessed are, Foundations in Social Sciences for Nursing, Biological Sciences Applied to Nursing, Foundations in Evidence Based Practice, Promoting Health, Communication and Interpersonal Skills, Law and Ethics, Ethnicity, Diversity and Spiritual Health. These themes are then built upon in the branch programmes, namely, the 'adult', 'mental health', 'learning disabilities' and 'child' branches through context specific subjects which encompass Care Delivery and Management, Health Information and Technology, The Accountable Practitioner, Portfolio, Evidence–Based Practice. Because of the varying educational backgrounds of the students and their differing interests, their ability to achieve good grades in all assignments also varies. However support is available through a personal tutor system, tutorials from module tutors and extra help from the student support department.

All students have practical experience in each of the four branches of nursing during the CFP, including allocations to wards and departments in National Health Service (NHS) Trusts, nursing homes in the independent or voluntary sectors or in community settings where patients may be visited in their own homes. Students spend 50% of the required 37.5 hours per week in the classroom and in self-directed study, and 50% of the time in practice placements. They are supported and assessed in practice placements by mentors who are qualified in their area of work as required by the Nursing and Midwifery Council [4]. Since student nurses come from a variety of backgrounds, with differing levels of general education and more or less experience of health care, their preferred learning styles are likely to differ.

LEARNING STYLES

The definition of 'learning styles' is broad. For example, Lohri-Posey [5] proposes that the term describes an individual's preferential focus on different types of information, the way the information is perceived and the rate at which the information is understood. The number of models of student learning styles is vast, as recognised by Curry [6] who identified 21 different models. Riding and Cheema [7] note that they all purport to have a practical application, particularly in education and training. In nurse education internationally, a variety of learning style instruments have been employed, suggesting the importance of matching learning experiences with student learning styles. A study in Taiwan [8] for example, used the Chinese version of the Myers-Briggs Type Indicator [9] which measures individual preferences in four dichotomous dimensions of Jungian theory: extroversion/introversion, sensing/intuition, thinking/feeling, and judging/perceiving. The most common learning styles among Taiwanese students were found to be introversion, sensing, feeling and judging. In England, Cavanagh et al [10] found that 53.7% of students had a predominantly concrete learning style and 46.3% of the 192 general nursing/DipHE students were reflective, according to Kolb's [11] Learning Styles Inventory. Also in England, Astin et al [12] found that 137 female Macmillan Clinical Nurse Specialists showed a strong or very strong preference for one or two learning styles, with the majority being highest in the 'reflector' learning style, followed by 'theorist', based on measurements from Honey and Mumford's [13] Learning Styles Questionnaire (LSQ, 80-item version). In Wales, a study process questionnaire (SPQ) administered by Snelgrove [14] measured surface, deep and achieving approaches to learning in undergraduate and diploma nursing students. The results revealed that many of the students were taking a surface or surface/achieving approach to their studies. A final example, although there are many more, comes from Australia, where Meehan-Andrews [15] employed the 'VARK test' [16], namely, Visual, Aural, Read/write, and Kinaesthetic sensory modalities to determine the different ways in which students might receive information. The results were interpreted as the majority of students preferring to receive information kinaesthetically and so favoured practical sessions. As well as identifying learning styles, some studies have shown variables, including age [17] and gender [18] to affect student learning styles. Indeed with researchers considering so many different aspect of learning styles, it is difficult to disagree with Curry (page 50) [19] who commented that,

"Like the blind men in the fable about the elephant, learning styles tend to investigate only a part of the whole and thus have yet to provide a definitive picture of the matter before them."

The wide range of tools available for measuring learning styles, each with their own terminology and specific focus are testament to the complex nature of learning and the results of research, such as those mentioned above, indicate that programme planners need to provide a range of learning experiences that students will find enriching in order to facilitate their learning. The University of Nottingham, School of Nursing provides such a range, including e-learning, lectures, discussion, debates, group work and Enquiry-Based Learning. In addition, students learn in clinical areas from experienced nursing staff, other professionals and patients. The learning that can be gained from the latter group is highly acknowledged in our School of Nursing and is particularly relevant to the present paper, where the terms, 'patient' and 'service user' are used interchangeably.

SERVICE USER AND CARER INVOLVEMENT

Service user and carer involvement in health care is supported at a national level in the United Kingdom by the NHS Plan [20], the Department of Health's [21] Patient and Public Involvement agenda and the Health and Social Care Act [22], which placed a duty in law on the NHS to make arrangements to involve and consult patients and the public in decisions about health services. The spirit of patient and public involvement has percolated into nurse education with recommendations to involve service users and carers in many aspects of nurse education [23], [24]. The University of Nottingham has embraced the concept of service user and carer involvement [25] and the School of Nursing Service User and Carer Strategy [26] identifies a number of development areas in the pursuit of embedding the concept of involvement in the work of the school. Service user and carer involvement in curriculum design, delivery and management and involvement in practice learning are just two areas relevant to the present paper.

It can be argued that service users contribute to the learning of student nurses simply by being there in clinical placements. However, this involvement is usually passive [27]. Nurses and students relate to patients in clinical placements in the role of 'helper', with the patient being 'helped' [28], because the primary purpose of healthcare organisations it to treat and care for patients. The teaching of students is an important but secondary role, and whilst registered nurses in the United Kingdom are expected to facilitate students to develop their competence [29] this is not a requirement of patients. Service users however, are often keen to support student learning for a variety of reasons, such as, 'giving something back' or wanting students to know what it is like to be diagnosed with a particular condition [28]. Students benefit from learning not only from experienced lecturers but also from the perspectives of qualified professionals and patients. It is not always feasible for professionals and patients to teach students in a classroom setting and the situation in practice does not automatically allow students to ask questions of patients in a clinical situation [28]. An example of the need for students to learn from specialist practitioners and patients is in learning about diabetes.

THE DIABETES EPIDEMIC

On an international scale diabetes affects approximately 246 million people worldwide [30]. Globally, a person dies every 10 seconds from a diabetes related cause (30) and people with diabetes are 2-4 times more likely to develop cardiovascular disease (CVD) than those without a diagnosis of diabetes. The consequences of diabetes-related illness have enormous implications for nursing care delivery and therefore should be seen as fundamental to all nursing practice. Within the current economic climate which stresses the importance of effective financial management, the present 5-10% of the healthcare budget within the United Kingdom that is currently utilised by people with diabetes needs to be considered when reviewing effective intervention strategies. It is inevitable that the requirement for care will increase with the need to provide care for those developing complications from existing disease and those who are at risk from developing diabetes due to the current obesity epidemic. Eighty percent of those with Type 2 diabetes are clinically obese (i.e. Body Mass Index $\geq$ 30). It is clear then that student nurses need to learn about the nature and management of diabetes, since they are likely to encounter many people with this currently incurable condition at some point in their nursing careers.

The management of diabetes

Although there is a range of medical interventions available to 'manage' diabetes there is also a need for patients to manage their own condition, since each patient and/or carer will have different needs and wants about the care they hope to receive. Previous experience within healthcare, which may be either positive or negative will influence a person's perceptions of the health care system. Within diabetes management in the United Kingdom, the whole philosophy of care has changed from being

very didactic and medicalised to being patient focused [31]. This recognizes that a patient lives with this long term condition on a twenty-four hour, three hundred and sixty-five days per year basis; the patient is the only one who can truly understand the impact this has on everyday life and on others around them.

The challenge to the historical medical model in diabetes management creates ambiguity around what constitutes effective management, therefore clinical practice tends to be centred on symptom management and complication prevention. As a result of medicine's scientific culture based on the evidence from randomized control trials and the desire for cure [32] there is a tension over the best approach to treatment and care, depending on whether the illness is considered from the perspective of the patient or the clinician. Cultural and social differences alter opinions on clinical effectiveness. Whilst scientific research is carried out and reported on in scientific journals, many of the qualitative elements of the experience of the disease, which cannot be measured in a truly scientific way, consequently go unrecognised by the clinicians. This potentiates a problem with regard to clinical effectiveness and the usage of credible evidence, which is focused on traditional scientific methods and which are reflected in current policy documents from organizations such as the National Institute for Health and Clinical Excellence (NICE) and the National Service Frameworks (NSFs).

As well as being aware of research evidence relating to diabetes, which is available through Randomised Control Trials (RCTs), it is vitally important for nurses to understand the subjective experiences of patients so that they can respond to individuals appropriately. At the same time, it is important for patients to understand the nature of their condition, since it is they and their carers who will be involved in the management of the condition on a daily basis. One way of ensuring that patients receive the appropriate information is to institute group education. Not only is this method an effective use of the professional's time, it has also been acknowledged as an effective adult education strategy [33], [34]. In addition, group education is supported by the UK's National Institute for Health and Clinical Excellence (NICE) guidelines on the management of Type 2 diabetes [35].

So it was with an awareness of the need to provide students with a range of ways of learning to meet their varying learning styles and a clear view about the importance of understanding and giving a voice to the patient's perspective in relation to diabetes that we created a Clinical Practice Teaching and Learning Observatory (TLO).

TEACHING AND LEARNING OBSERVATORY (TLO)

The concept of a Teaching and Learning Observatory (TLO) derived from the work of Coyle [36] who used videoconferencing to link student teachers of languages in a university classroom with experienced teachers in a state school in the United Kingdom. Since student nurses need to link theory to practice, as in the case of learning about diabetes, it was decided to develop the idea of a TLO in health care settings. The establishment of a Clinical Practice Teaching and Learning Observatory (CP-TLO) involved the organisation of classroom content to coincide with a patient education group in the diabetes clinic, ensuring that we gained the consent of the service users and carers and that we had the support of a technician familiar with the videoconferencing equipment.

Prior to the session, the students were encouraged to complete a workbook that focused on a patient's journey through diabetes (type 2). By completing the workbook students would gain knowledge of the current epidemiology, both national and international. They would be able to consider a patient's experience and the nurse's role from diagnosis to the point where insulin would be required. The workbook formed part of the preparation for engaging in the CP-TLO. A lecture on the biological basis of diabetes followed by information on the need for good glycaemic control, the barriers to control and the challenges to improving patient understanding and adherence to therapy added to the preparation for students. An exploration of the impact of patient education in a group setting and consideration of factors influencing patient choice in insulin initiation provided further groundwork. Emphasis was put on the need to appreciate the patient's perspective when life-changing medical interventions are advised. Normally student learning on diabetes would end at that point, with an expectation that students would follow up the session with further reading and some, but by no means all, students would have the opportunity of being involved in a patient education group in a diabetes clinic at some time during their three year course. However, the CP-TLO was designed to allow all students to meet a group of patients at a key stage in their education about the disease and its treatment.

The idea for a CP-TLO was discussed with an experienced specialist diabetes nurse who ran patient education groups and who was familiar with the nursing curriculum as a mentor of students during their practice placements. Being eager to participate, the nurse gained permission from the NHS Trust in which she was involved. The patients selected for the group were those who were on the caseload of the specialist nurse. All had found that the oral therapy for their Type 2 diabetes was no longer producing effective glycaemic control. They had accepted the need for a change to the management of their condition through use of insulin injections and had all agreed to attend a group education session.

Four patients and one carer were approached by the specialist diabetes nurse, who was already known to them, to discuss the possibility of participating in the CP-TLO. A letter and information sheet explaining the process and giving contact details was sent. The letter explained that, if the patients did not wish to be involved in the exercise, another appointment could be made. It was also explained that the video link would be a live broadcast, so no recording of the session would be made. All patients and the one carer agreed to be involved and signed consent forms. It was explained that they could withdraw from the session at any time and alternative arrangements would be made to ensure that they would not miss any vital information to enable them to undertake insulin therapy.

During the video-conferencing session, the support provided by the IT technician was invaluable. He liaised with staff in the clinical area and set up the videoconferencing equipment. A Tanberg 990MMX videoconferencing system was located in the classroom, with a camera attached and an IPContact PowerPlay with a camera attached was used for the remote site.

At the appointed time, a video link was made between the classroom and the diabetes clinic. Introductions were made and the process reiterated, including assurances of confidentiality. The camera and sound in the classroom was switched off so the students could see and hear the nurse, patients and carer in the clinic but they could not hear the students. During this time the students identified questions they wanted to ask the participants in the clinic. Students in the classroom had the same equipment as the patients in the clinic, so they were able to 'inject' a model in the form of a 'duck' at the same that the patients were practising the technique. At the end of the patient education session, the camera was again switched on in the clinic enabling two-way communication once more.

The students asked questions of the patients, such as, "How did you feel when you were first told you had diabetes", "How do you feel about having to take insulin?", "Do you have any worries about injecting yourself?", "How did you feel about being watched by us?" Interestingly, the patients responded to the latter question by saying that they had forgotten about the camera when the education session had begun and that they were pleased to be able to help the students. At the end of the questions the patients and carer were thanked for their participation and given a 'thank you' letter in appreciation of their involvement in nurse education.

The students were asked about their experiences of being involved in the CP-TLO. Some negative comments were made about the technical quality of the sound, which will be addressed in future sessions, but overall they had found the session had added to their knowledge about patients' perspectives on diabetes and they had enjoyed hearing about the patients' experiences. It was felt therefore that the exercise could be repeated for the next group of students.

CONCLUSION

This paper has provided supporting information and a description of the implementation of a Clinical Practice Teaching and Learning Observatory. It is important to note that what has been described is a work in progress. We are currently exploring the available technology to improve the sound quality and we are investigating the application of the CP-TLO in other areas of nursing, such as mental health and learning disabilities. It is a technological innovation in nurse education that could be extended to many heath and social care courses that require students to link theory to practice and where service user involvement and/or the expertise of clinical practitioners is essential. It is hoped that our experiences will inspire others to explore ways of using videoconferencing to enhance student learning in a wide range of areas.

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