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Centre for Integrative Learning

The PAVE Study (Physical Activity Virtual Education): Development of Reusable Learning Objects (RLOs) to Enhance Nursing Students' Knowledge and Understanding of Physical Activity

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Project Outline

The aim of this project was to design, build and test two sustainable reusable learning objects (RLOs) for physical activity (PA) and provide opportunities to assess changes in knowledge and self-reported behaviour following exposure. The RLOs developed for this project encourage self-directed learning and help to foster transformational learning and facilitate critical reflection. Specifically, this means that students will be able to work through the content independently and engage with the RLO at a time and place convenient to them – an important factor in nursing since our students spend a significant proportion of time outside of the university setting.

This project supports the integration of new technologies into the traditional learning environment for health promotion. The RLOs will be used as an interactive medium to promote the understanding of physical activity as both a key public health issue and one that they need to address both professionally (through their role as a nurse) and

personally (through applying what they learn to their own behaviour). Additionally, the project will support critical reflection on students' learning, since there will be opportunities to assess students' knowledge and behaviour change before and after they have engaged with the RLOs.

Introduction

Inactivity is a significant public health problem associated with a range of preventable diseases. Current government recommendations suggest that individuals should be engaging in at least thirty minutes of moderate intensity physical activity on most days of the week. However, it is thought that less than 20% of adults in most developed countries are active enough for health or fitness benefit.

Recent government publications emphasise the role of the public sector, and in particular the NHS, in promoting healthy lifestyle choices among the general population and setting the benchmark for workplace health and well-being (DH, 2004; DH, 2008; DH, 2009a; DH, 2009b). Nurses, who constitute the largest occupational group in the NHS and have the most direct contact with patients and their families (Blaber, 2005; Blake and Lee, 2007), are often seen as a point of reference for healthy
behaviours (Aristizabel and Rodrigeuz, 1998; Connolly *et al.*, 1998; Kutlu, 2008). Therefore, the promotion of healthy practices among NHS nurses has become a key priority in the delivery of UK government health policy (DH, 2009a, DH, 2009b).

Whilst health promotion is evident in the pre-registration nursing curriculum, it seems that this may not be enough to impact on health behaviours of student nurses. Despite being educated to promote active lifestyles to patients, student nurses are

often lacking in knowledge about the level of physical activity required for health benefit and how to achieve this during the course of the day (nor do student nurses meet these requirements themselves showing they do not always effectively apply their learning to their own behaviour). This is important since student nurses will become role models to their patients (DH, 2009a; DH 2009b; Aristizabel and Rodrigeuz, 1998; Connolly *et al.*, 1998; Kutlu, 2008). Furthermore, improving the health of future nursing staff will help to decrease preventable sickness absenteeism, and increase productivity and 'presenteeism' in the NHS. Specifically, a recent large-scale survey of our nursing students has suggested that knowledge of recommended levels of physical activity is poor and many students are unclear as to what constitutes 'moderate' activity (C. Pisano, MNursSci 2007, supervised by H. Blake). Furthermore, only a small percentage of students report engaging in incidental activities throughout the working day including active travel, stair-use and walking. There is also a lack of knowledge that daily activity can be broken down into 'chunks' of time rather than being continuous or structured activity. There is still a clear need amongst our nursing students to increase awareness about *why* people need to increase their activity levels and *how* they might achieve this, in order to educate these healthcare providers of the future and encourage them to look after their own health, which remains high on the government agenda.

Integrative Learning Rationale

This study has designed and tested two reusable learning objects for physical activity and health which will be formally evaluated for impact on student learning. Content includes the importance of physical activity as a public health issue and education regarding methods by which physical activity can be incorporated into everyday life. Engaging with the RLOs will help students make connections between the health

promotion advice they are taught to give as part of their nursing role, and apply it to their own activity levels, health and wellbeing (e.g. learning how to 'practice what they preach'), using a novel e-learning method, based on a model of 'holistic learning' where students relate concepts of health to their own health behaviours.

Methodology

Why use e-learning for health promotion? The UK National Health Service (NHS) is undergoing radical changes in what has been described as 'an Information and Communications (ICT) revolution' Crompton, 2007) with the initiation and implementation of the NHS National Programme for IT (NPfIT). As such, technology is increasingly used for health communications, healthcare delivery and patient monitoring (Blake, 2008a; Blake, 2008b) and there is an assumption that healthcare practitioners have competence in such technologies both in patient care and in maintaining an updated practice. This requires concurrent changes in educational practice which extend beyond the familiar, traditional and didactic modes of classroom-based teaching delivery to incorporate new and innovative teaching methods as Higher Education Institutions (HEIs) respond to technological advances and demands on resources (Kenny, 2000). Information and communication technologies are now being increasingly used in learning and teaching to supplement learning and catalyze the rate of knowledge transfer (Adams, 2004; Blake, 2009; Mehanna, 2004). Furthermore, there is a strong student demand for a component of multimedia technology in their education (Blake, 2010; Walmsley *et al.*, 2003). RLOs are currently used in the School of Nursing, Midwifery and Physiotherapy in collaboration with RLOCETL although to date none have been available for the promotion of physical activity for general health benefit. There was a need identified for the development and evaluation of RLOs in this area.

Why develop RLOs specifically? Research has shown that reusable learning objects (RLOs) provide opportunities for flexible learning, either to supplement traditional methods of learning, consolidate classroom teaching or for revision aids (Blake, 2009; Blake, 2010). These studies have highlighted that students do use them, do find them helpful to supplement their learning and do want to use them in the future, although they identified that more need to be developed.

Content for two RLOs was generated by the Project Leader. The developed resources include a combination of text, online interaction and quiz elements. This is in order to present information with an interactive element as research has suggested that elearning materials are more effective as interactivity increases. Specifically, previous research suggests that health promotion using health technologies is more effective when there is an interactive element. Further, adding a quiz not only increases interaction but also adds a 'fun' element to the learning process and using a variety of elements within the RLO will appeal to multiple learning styles.

Creation of the RLOs involved the development of a storyboard in consultation with a media developer onsite, and liaison regarding timescales and practical IT issues. Once the RLOs were in draft form, working prototypes were usability tested with nursing student volunteers and these individuals provided verbal feedback about the content, navigation and appearance of the RLO after which features were refined and improved. Internal and external peer reviews were conducted and final amendments made.

Implementation

The resources engage students in learning through a mix of text, online interaction and a quiz to appeal to different learning styles and also to maximise effectiveness as e-learning is often more effective with greater individual interaction. The RLOs have been subject to formal peer-review to evaluate pedagogy, format, usability, navigation, interactivity, delivery, ease of updating, distribution, and access (Ruiz, 2007). These learning tools have been delivered to sixty-four Masters in Nursing Science pre-registration nursing students in year one (Module: 'Behavioural Sciences and Health', session 'Health-related lifestyle behaviours'). Both packages are now available online at the URL provided below.

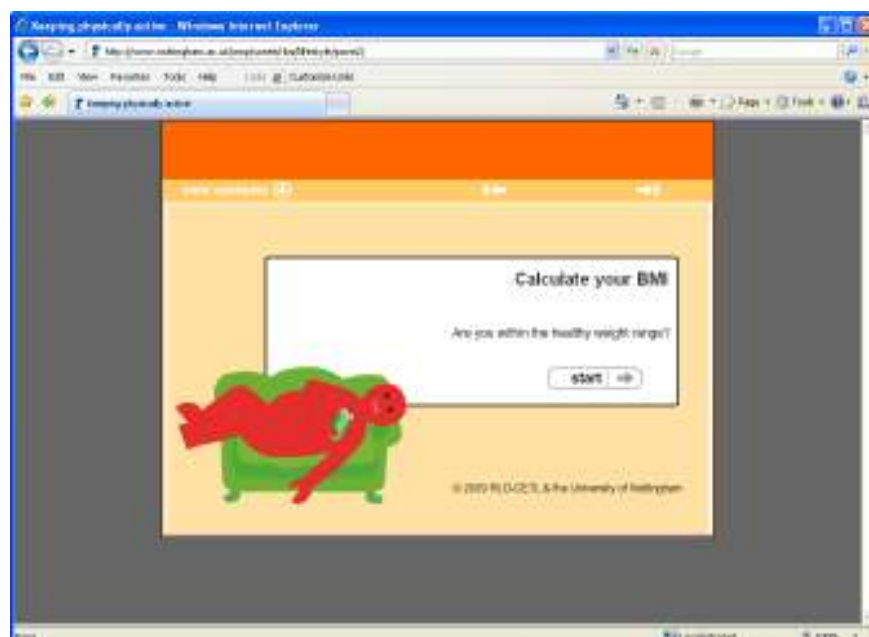RLO1: Physical Activity and Health Example Screenshots

Available at: http://www.nottingham.ac.uk/nmp/sonet/rlos/lilfestyle/pave1/
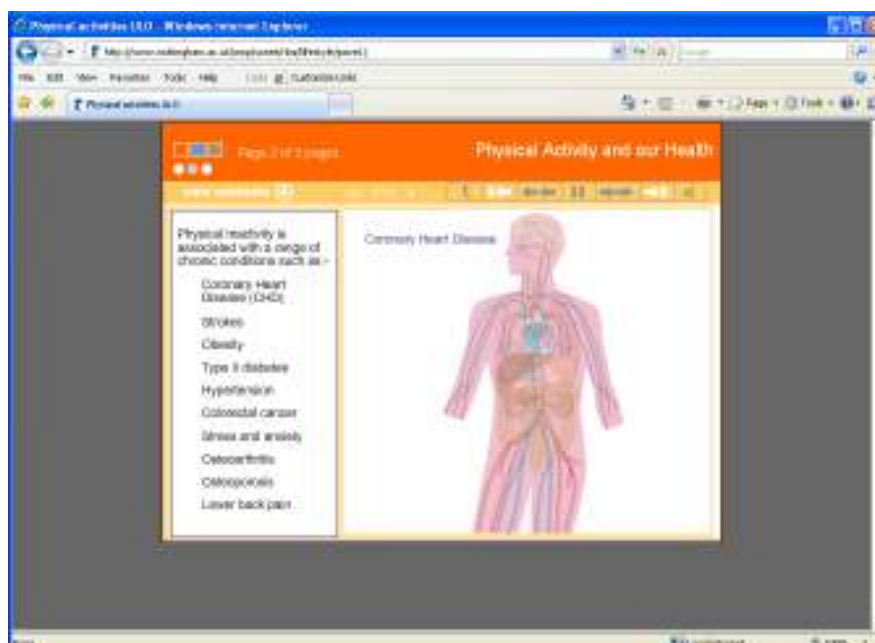
RLO2: Keeping Physically Active

Available at: http://www.nottingham.ac.uk/nmp/sonet/rlos/lilfestyle/pave2/

Evaluation

Evaluation was conducted throughout the development of the RLOs through a formative internal and external peer review process. Initial feedback shows clearly that the students enjoyed using the RLOs, with comments including:

RLO1 Physical Activity and Health:

- 'Great, really liked it, clear and engaging, well organised and very current!'

- 'Narration clear and audible – very professional.'

- 'I am pleased to see people being active in a variety of ways, alone AND together.'

- 'I particularly liked the 'scoring a goal' for the correct answer, I found the applause really gratifying!'

- 'This RLO is very accessible and the learning objective is shared across many disciplines and courses.'

RLO2 Keeping Physically Active:

- 'This RLO is approachable, friendly and informative.'

- 'Overall the animations are very good and consistent with the 'sister' RLO.'

- 'Very clear and easy to navigate.'

Ethical approval has been granted by the University of Nottingham Medical School Ethics Committee to evaluate the impact of the RLOs on learning outcomes, which will follow the process outlined below in modules running in 2010. Pre and post knowledge questions will be administered with a usability evaluation immediately post exposure to the RLO, to allow students to reflect on the learning experience and learning environment. Three month follow-up telephone interview data (self-reported activity level and repeat of knowledge scores for physical activity) will be collected and will provide important data on long-term impact on learning. The process will revolve around two main questions:
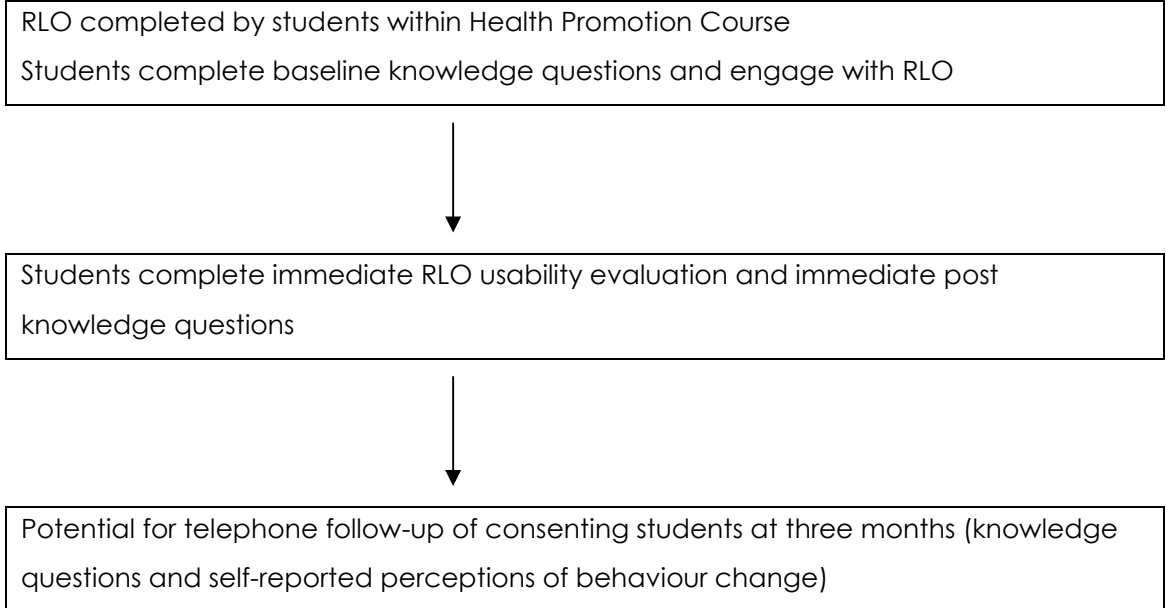
1. Can RLOs be used to effectively:

   - establish and elaborate nursing student's knowledge and understanding of physical activity as a public health issue (RLO1)?

   - increase nursing student's knowledge and understanding of how to increase physical activity through incidental and structured activity in a workplace setting (RLO2)?

   - assess change in physical activity behaviour following engagement with the RLO?

2. How do nursing students evaluate the usability of the RLOs and the impact on their learning experience?

<u>Process Model</u>

Development process

> Specification for the RLO content (by H. Blake)
>
> Peer review processes
>
> Formative evaluation process

Evaluation Process

RLO completed by students within Health Promotion Course

Students complete baseline knowledge questions and engage with RLO

Students complete immediate RLO usability evaluation and immediate post knowledge questions

Potential for telephone follow-up of consenting students at three months (knowledge questions and self-reported perceptions of behaviour change)

Future Developments

The Project Leaders have been awarded further funding from CIL to develop a professional certificate for workplace health champions into an e-learning course called 'Understanding Health Improvement'. The RLOs developed in the current project can be used as additional support resources for students undertaking this e-learning course. The two RLOs will also be referenced as resources for healthcare students engaging with two Computer Aided Learning (CAL) packages called 'Physical Activity in Older People' and 'Active Ageing' currently under development. These generic tools will also be used within health promotion teaching within the School of Nursing, Midwifery and Physiotherapy.

References

Adams, A. M. (2004), Pedagogical Underpinnings of Computer-Based Learning. *Journal of Advanced Nursing, 46,* 5-12.

Aristizabal, C. and Rodriguez, S. M. (1998), Health Habits of Health Professionals. *Revista de Enfermeria, 21*(237), 15-18.

Blaber, A. Y. (2005), Exercise who needs it? *British Journal of Nursing, 14*(18), 973-975.

Blake, H. and Lee, S. (2007), Health of Community Nurses: A Case for Workplace Wellness Schemes. *British Journal of Community Nursing, 12*(6), 263-267.

Blake, H. (2008a), Innovation in Practice: Mobile Phone Technology in Patient Care. *British Journal of Community Nursing, 13,* 160-165.

Blake, H. (2008b), Using Technology in Health Promotion Intervention. In: Blakely, M. R. and Timmons, S. R., eds. *Lifestyle and Health Research*. NovaScience Publishers, New York, pp. 17-76.

Blake, H. (2009), Staff Perceptions of E-Learning in Healthcare Teaching Delivery. *Learning in Health and Social Care, 8,* 223-234.

Blake, H. (2010), Computer-Based Learning Objects in Healthcare: The Student Experience. *International Journal of Nurse Education Scholarship*. In Press.

Connolly, M. A., Gulanick, M., Keough, V. and Holm, K. (2008), Health Practices of Critical Care Nurses: Are these Nurses Good Role Models for Patients? *American Journal of Critical Care, 16*(4), 261-266.

Crompton, P. (2007), The National Programme for Information Technology – An Overview. *Journal of Visual Communication in Medicine, 30, 72-77.*

[DH] Department of Health (2004), *Choosing Health: Making Healthy Choices Easier*. The Stationary Office, London.

[DH] Department of Health (2008), *Healthy Weight, Healthy Lives: A Cross Government Strategy for England*. The Stationary Office, London.

[DH] Department of Health (2009a), *Healthy Weight, Healthy Lives: One Year On*. The Stationary Office, London.

[DH] Department of Health (2009b), *NHS Health and Wellbeing Review. Interim Report.* The
Stationary Office, London.

Kenny, A. (2000), Untangling the Web: Barriers and Benefits for Nurse Education: An Australian
Perspective. *Nurse Education Today, 20,* 381-388.

Kutlu, R. (2008), Evaluation of the Frequency and Factors Affecting Smoking among Nurses.
Gulhane Medical Journal, *50*, 65-70.

Mehanna, W. N. (2004), E-Pedagogy: the Pedagogies of E-Learning. *Research in Learning
Technology, 12,* 279-293.

Walmsley, A. D., White, D. A., Eynon, R. and Somerfield, L. (2003), The Use of the Internet within
a Dental School. *European Journal of Dental Education, 7,* 27-33.