PERSPECTIVES ON THE APPLICATION OF TECHNOLOGY TO ENHANCE LEARNING IN AN UNDERGRADUATE NURSING DEGREE PROGRAMME

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Introduction

This paper discusses concepts and practice relating to the use of computer-based technologies for enhancing learning. It draws on examples from a UK nursing degree programme.

Education is a tool for social change (Freire Institute 2014) and the use of digital technologies has potential to democratise education by enhancing access to learning across the globe (Gilbert 2014). Mass communication can influence deeply embedded social patterns and support social change by helping to reduce educational inequities. For example, Massive Open Online Courses (MOOCS) are freely available online educational resources. They are provided by commercial and non-commercial organisations, and increasingly by higher education institutes (HEIs). MOOCS are predicated on person-centred learning, in that it is the learner who makes decisions about structure and content. Thus it could be argued that, in addition to widening access to education, MOOCS further democratise learning by reducing the influence of teachers. However, there is a discourse around who really benefits from MOOCS, and whether they truly make mass learning possible. A view reported in the press is that a high proportion of people using free education are already sufficiently wealthy and well educated to access HEIs (Financial Times 2014). This has implications for philanthropic providers of MOOCs, who may conclude that they are inadvertently strengthening existing educational inequalities.

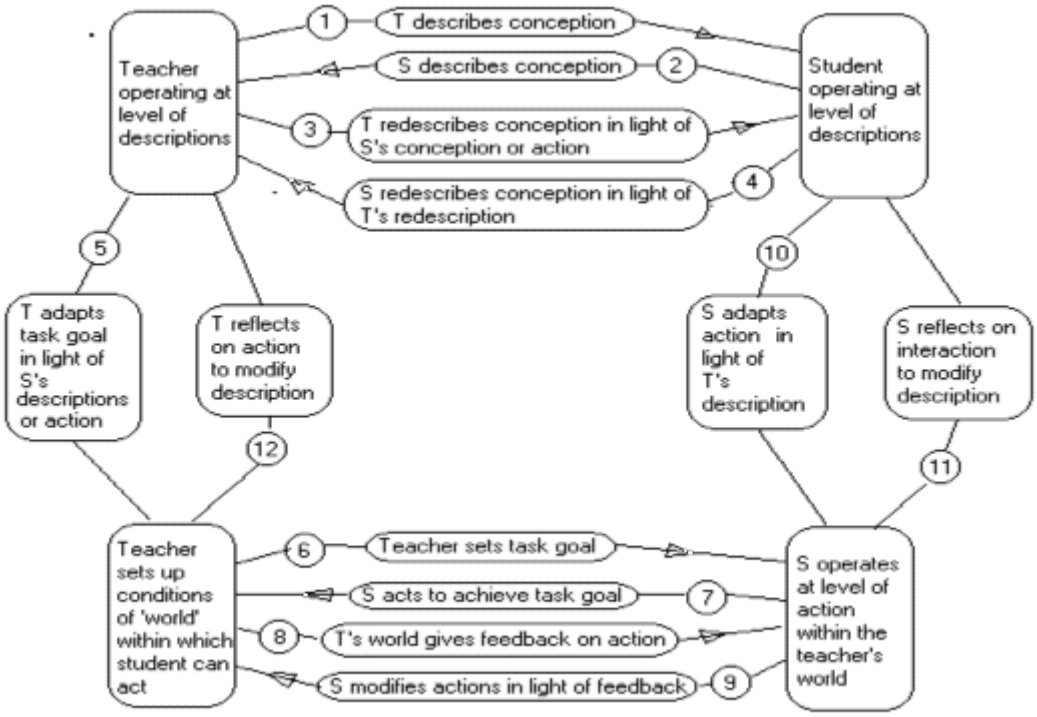
MOOCs provide university-quality educational courses (Quality Assurance Agency for Higher Education 2013) available to anyone with access to the internet; meanwhile, universities have also embraced educational technologies. Virtual Learning Environments (VLEs), simulated worlds, social

media, videos, podcasts, lecture capture, and feedback mechanisms using smartphones are commonly used in UK HEIs (Centre for Learning Technology 2014). Hence there is some blurring of functions between tradtional and new providers of higher education.

Perspectives on using technology to enhance learning inhigher education

These shifts have generated lively debate about the potential and pitfalls of e-learning in HEIs. The reduced teacher contact characteristic of online learning can unnerve or fail to engage students. Equally, face-to-face teaching is not best suited to all settings: in a large, non-interactive lecture, the physical presence of a teacher can have limited impact on the learning process. In our university nursing department, there can be over 400 nursing students in a cohort, and we rely heavily on technology. We often use 'blended learning', a term that denotes programmes of learning which combine face-to-face and online activities. Heinze et al. (2007) used Laurillard's conversational model (Laurillard 1993) (Fig 1) to develop a theoretical understanding of blended learning. The conversational model shows progression from knowledge exchange to deep understanding and incorporates iterative exchanges and periods of reflection for teacher and student. It has particular valuefor us, because it helps explain how to combine art (personal and intellectual skills development) with science (physical skills and factual information), both equally important in nursing.

Fig. 1: Conversational model of teaching (Laurillard 1993:103)



Heinze and colleagues acknowledged a challenge of student engagement in e-learning, recognising that students may not complete online tasks, e.g. formative assessments, tutorial preparation or studying learning resources. They argued that online and face-to-face activities are not equivalent, and conceptualised online learning as complementary to face-to-face learning, not a replacement. Nicol (2007) described a series of case studies exploring the use of online multiple choice questionnaires (MCQs) in formative and summative assessment in higher education. Although the findings are specific to the study contexts, the paper illustrates how online MCQs can be an efficient and popular learning and assessment mechanism when integrated creatively into a course.

Some discourse around using technology to ehance education has been concerned with finding the most effective blend of online and face-to-face activities. Analysis of a survey of over 2000 Austrian university students identified that e-learning was preferred for more structured tasks, and face-to-face learning preferred where the aim was to reach a shared understanding (Paechter et al. 2010). This suggests the possibility of developing a formula for blended learning, tailored to the subject matter and learning outcomes. Goodfellow (2013)'s critique of using technology in learning concluded that learning activities could be blended to achieve a functional balance between accessibility, scholarship and technology. The literature therefore offers encouraging perspectives that endorse blended learning.

Importance of the student-teacher relationship

An issue for blending learning design in HEIs is the extent to which student learning is influenced by the student – teacher relationship. Evidence from mental health research around self-help may be relevant, because self-help and online studying both represent changes to traditional face-to-face guidance. Studies have shown reliably better outcomes from online, telephone or book-based therapies if patients feel supported by their relationship with the practitioner (Richardson and Richards 2006; Lovell et al. 2006; Gellatly et al. 2007; Bee et al. 2010). Similarly, anecdotal evidence from colleagues within our nursing department suggests that students engage better with online learning when it is part of blended learning. Our experience resonates with Brookfield (2006)'s view that students learn better in a supportive emotional environment. Therefore, there is support in the literature for ensuring that blended learning includes meaningful personal contact with a teacher.

Using technology to enhance social inclusion in university communities

UK universities have a widening participation agenda, and nursing attracts a diverse student population. In our experience of nursing education, students who are unfamiliar with university culture sometimes reveal they are so intimidated by the large university libraries that they avoid them; yet the virtual university library enables them to explore their subject without triggering feelings of social inadequacy. In a well-run virtual learning environment (VLE), teachers can make rich resources readily available. Usingthe VLE, students can attend lectures, visit a library, participate in seminars, and develop networks, all in cyberspace. Thus a technology enhanced environment may be a powerful force for social inclusion.

Some of our nursing students have limited academic skills before entering university, and some have difficult personal circumstances, social disadvantage, health problems or disabilities – typically in our department, around 13% of our nursing undergraduates have declared a disability. However students who have, for instance, specific learning difficulties or sensory impairment, can manipulate visual and audio settings within the VLE to improve accessibility. Our department's VLE offers 24 hour access to carefully selected and structured learning resources. Using phased release, we can create and structure online course materials. Early access to materials for individual students can be arranged if agreed. Online resources can be studied at the student's convenience, thereby reducing difficulties around child care, travelling into campus, and part time working which are known to be important barriers to engagement (Pryjmachuk and Richards 2007). Finally, there is also a growing body of rigorous evidence (e.g. Gomes et al. 2011) to suggest that students engage better in deep learning if they have control over the timing of study periods.

Project 1: Recognising and addressing a need for additional study skills support

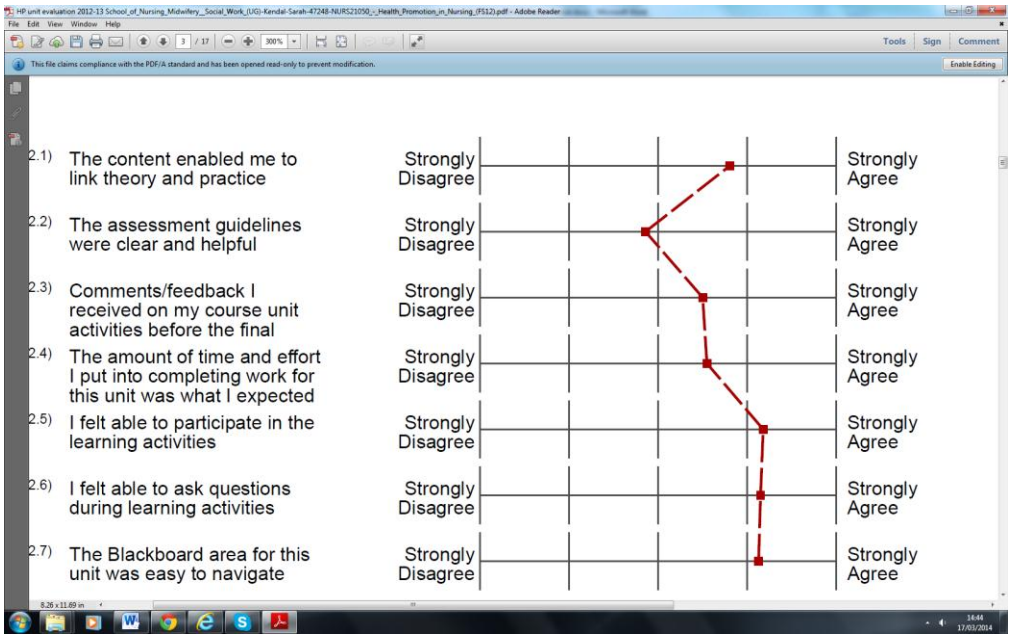
In our department, many student support mechanisms are accessed via the VLE in the first instance. In theory, students can readily find out where or who to turn to for help with personal and course related concerns. Nevertheless we noticed a specific issue around study skills support. There seemed

to be raised anxieties amongst students enrolled on a particular Level 5 module, concerning their ability to write the course assignment (an essay of 2500 words). As caring educators, module staff were responding with time-consuming, individual academic coaching. When we recognised this, we felt that such ad hoc support was inequitable and inefficient, and we therefore looked for a fairer and more effective way of responding to the issue.

We explored the module feedback from this cohort (see Figure 2). The feedback was received between the end of the module and the submission date for a summative assignment. This indicated that the students felt they should have had more assignment support during the module. However, the proportion of teaching time devoted to the assignment was higher than that devoted to any of the clinical topics, so we did not wish to increase this. The teaching team, the department, and external examiners were confident in the assignment guidelines. In view of these perspectives, we reflected on what might be driving students' perceptions of their support needs. Drawing on Brookfield's work (Brookfield 2006) we speculated that some of the concerns about assignment support might stem from low confidence, rather than low competence. Therefore, we designed an extra-curricular blended learning resource with the aim of enhancing generic study skills and self confidence. We presented it to the cohort as an optional extra.

Our blended learning model combined four, 50 minute, face- to-face study skills sessions on topics such as 'Understanding the marking criteria' and 'What is critical analysis?'. We delivered the sessions to groups of around 20 students, with online materials available from the VLE. These included: an open access resource about study skills; a YouTube video about academic writing; and a new online writing group. To avoid any licensing problems, all the resources were provided via hyperlinks. We also reproduced links directing students to extremely relevant materials within the module's VLE that they already had access to but might not have looked at previously: assignment guidance; the module handbook; marking criteria; several marked sample essays from a previous cohort (anonymised and with authors' permission) and a link to a writing resource from another university department.

Figure 2: Sample of student feedback



To help understand the value of the study skills sessions to the students, we distributed a questionnaire to the cohort pre- and post- the first study skills session. As this was an enhancement of the learning module, student participation did not raise research ethics issues. We selected a widely validated, unidimensional scale (Schwarzer and Jerusalem 1995) intended to assess perceived self efficacy through various domains of human functioning. It consists of ten simply phrased questions to be scored 1-4, with a maximum possible test score of 40 (Figure 3). e.g. "I can always manage to solve difficult problems if I try hard enough" (Schwarzer and Jerusalem 1995). We adapted the scale by asking students to complete it in relation to their perceived academic skills and not wider issues. We collected 79 pre- and 37 post- scores onto an Excel spreadsheet and calculated the the two means.

Reflections on Project 1

By using blended learning, we found a manageable path between face to face and online learning. Our study skills project was an attempt to respond to perceived student need. Attendance was better for the first face-to-face session, compared with the subsequent 3 sessions. In relation to self efficacy, the questionnaire feedback showed only a slight, insignificant improvement (pre: 2.94; post: 3.02). Therefore, our outcomes did not give us a mandate to proceed with the project. Interestingly, a subsequent cohort of students specifically requested us to repeat it. This later development suggests that it is possible for a new initiative to become embedded into the learning culture. There are many uncertainties to be explored, including the identification of appropriate constructs for understanding students' concerns around study skills.

Figure: 3 Study skills self- efficacy questionnaire

Please answer the questions below using the appropriate number **as shown in the box, i.e. 1 = not at all true, etc**. Please answer the questions only in relation to your undergraduate course and not in relation to yourself in general. The forms are anonymous but to help us with the analysis, please could you add the date and the username that you use for the university website (e.g. mdnmssk2). There is also a space for your comments.
Thank you

	Please answer as follows: ***1 = Not at all true*** ***2= Hardly true*** ***3= Moderately true*** ***4= Exactly true***	
	Date_____ University ID_____ **In relation to my university studies……**	**Response**
1	**I can always manage to solve difficult problems if I try hard enough.**	
2	**If someone opposes me, I can find the means and ways to get what I want.**	
3	**It is easy for me to stick to my aims and accomplish my goals.**	
4	**I am confident that I could deal efficiently with unexpected events.**	
5	**Thanks to my resourcefulness, I know how to handle unforeseen situations.**	
6	**I can solve most problems if I invest the necessary effort.**	
7	**I can remain calm when facing difficulties because I can rely on my coping abilities.**	
8	**When I am confronted with a problem, I can usually find several solutions.**	
9	**If I am in trouble, I can usually think of a solution.**	
10	**I can usually handle whatever comes my way.**	
	Comments	
	What has been helpful about the study skills support? **Insight and guidance with referencing, critical appraisal and reflection**	
	What has been less/not helpful about the study skills support?	
	What are your suggestions?	

Adapted from: Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale.

Project 2: Using discussion boards for module evaluation

A second project was an attempt to improve the student experience of module evaluation, together with the quality of evaluation data. We felt that students gain little from providing module teachers with feedback and we aimed to find a way to benefit them directly. We identified developing reflexivity in writing as a relevant and important skill for nurses, which we could incorporate into a feedback process. We drew on theory about the relationships between peer learning and deep learning (Bell 2001) and the application of technologies in higher education contexts.

We started with a cohort of around 350 Level 4 students and ten lecturers. We built a new evaluation mechanism into the VLE involving online, synchronous discussion boards. At their usual seminar time, students logged into the VLE instead of meeting in a room. They found the appropriate discussion board from a list, identified by the name of the lecturer who facilitated their classroom seminars. Student participation was registered automatically and counted towards attendance records. At the end of the hour, they clicked on a link to the formal quantitative evaluation form used across the university. The role of the lecturer was to facilitate the online discussion.

Those who logged on at the appropriate time were able to join in a lively, synchronous, facilitated discussion with peers from their seminar group. However, many students did not contribute at the set time and the majority of the discussions were asynchronous. Sixty-five percent of the cohort provided feedback, which represented considerably higher participation in feedback than we had previously experienced. Most students provided qualitative comments as well as completing the online evaluation form. Overall, the comments we received were measured and constructive, which suggested the students were exercising skills in expressing their thoughts appropriately. As many students did not contribute at the set time so the exercise had limited value as a synchronous discussion. However asynchronous discussions also appeared to be valuable, and some students wrote that they preferred being able take their time to think about their views before they shared them.

Reflections on Project 2

The online evaluation was a relatively new approach. Implementing these innovations required adjustments to custom and practice that could be challenging to staff and students. On reflection, we realised that more time spent preparing studentsand staff might have increased the proportion of the discussions that were synchronous. However the high level of responses has encouraged us to develop this feedback mechanism further.

Discussion

Student nurses face specific challenges. They must attend a high proportion of lectures and work potentially long shifts on placement (Nursing and Midwifery Council 2010).They can find themselves living amongst students on other courses who can more easily participate in extra curricula activities. The demands of completing a professional nursing qualification alongside a university degree mean that student nurses have reduced opportunities to get involved in university life and can feel overwhelmed by the combined difficulties of isolation, fatigue and academic demands.

Constructivist theories of teaching and learning suggest that we could expect our students to structure their own learning (Atherton 2011), yet for nursing students with diverse resources, abilities and self-belief, this may be a challengetoo far.

Our two projects showed us blended approaches can be a helpful way to harness the strengths of technology enhanced learning whilst retaining those of face-to-face learning. Our students appear to engage with online materials, but not necessarily as we teachers might intend. The components of context, content, delivery and evaluation seem to require careful unpacking, as do perceived and actual competence. Further development of the projects could include comprehensive evaluation strategies that explore these components. Further enhancement of the evidence base will support

theoretical insights and the continued development of educational practice in a technology-rich environment.

Laurillard's model (1993) emphasises the value of dialogue in learning and can be a helpful guide for developing blended learning strategies, as argued by Heinze et al (2007). A conversational model can help to prioritise interactive aspects of teaching and learning which may be at risk of being marginalised in a technology-driven learning environment. HEIs face challenges of raising student satisfaction while increasing student numbers. They need to meet student need in ways that are both helpful and sustainable. Better understanding of blended learning can help with this process.

References

Bell, M. (2001). Supported reflective practice: a programme of peer observation and feedback for academic teaching development. *International Journal for Academic Development* 6(1)

Brookfield, S. (2006). Understanding and Responding to the Emotions of Learning. *The Skillful Teacher: On Trust, Technique and Responsiveness in the Classroom.* San Francisco: Jossey-Bass.

Centre for Learning Technology. (2014). *About the Centre* [Online]. London School of Economics. Available: http://clt.lse.ac.uk/about-clt/ [Accessed 19 March 2014].

Financial Times (2014). *Moocs: Young students from developing countries are still in the minority* (Palin, A.) [Online]. ft.com: Financial Times Ltd. Available: http://www.ft.com/cms/s/2/8a81f66e-9979-11e3-b3a2-00144feab7de.html#axzz2vVoPhFbf [Accessed 19 Mar 2014].

Freire Institute. (2014). *Paulo Freire* [Online]. Freire Institute. Available: http://www.freire.org/paulo-freire/ [Accessed 19 Mar 2014].

Gellatly, J., Bower, P., Hennessy, S., Richards, D., Gilbody, S. & Lovell, K. (2007). What makes self-help interventions effective in the management of depressive symptoms? Meta-analysis and meta-regression. *Psychological Medicine,* 37(09)**,** 1217-1228.

Gomes, A.A.,Tavares, J., P. de Azevedo, M. H. (2011). Sleep and academic performance in undergraduates: a multi-measure, multi-predictor approach. *Chronobiol Int.* 28(9): 786–801. doi: 10.3109/07420528.2011.606518

Goodfellow, R. (2013). Scholarly, digital, open: an impossible triangle? *Research in Learning Technology* [Online], 21**,** 21366. Available: http://dx.doi.org/10.3402/rlt.v21.21366.

Heinze, A., Procter, C. & Scott, B. (2007). Use of conversation theory to underpin blended learning *Int. J. Teaching and Case Studies,* 1(1/2).

Laurillard, D. (1993). *Rethinking university teaching: A framework for the effective use of educational technology*. London: Routledge.

Lovell, K., Bee, P. E., Richards, D. A. & Kendal, S. (2006). Self-help for common mental health problems: Evaluating service provision in an urban primary care setting. *Primary Health Care Research and Development,* 7(3)**,** 211-220.

Nicol, D. (2007). E-assessment by design: using multiple-choice tests to good effect. *Journal of Further and Higher Education* 31(1)**,** 53-64.

Nursing and Midwifery Council (2010) Standards for Education [Online] Availablefrom http://www.nmc-uk.org/Educators/Standards-for-education/ [Accessed 07 Nov 2014]

Paechter, M. & Maier, B. (2010) Online or face-to-face? Students' experiences and preferences in e-learning. *The Internet and Higher Education,* 13(4): 292–297 Special Issue on Web 2.0

Pryjmachuk, S. and Richards, D. A. (2007), Predicting stress in pre-registration nursing students. *British Journal of Health Psychology,* 12: 125–144. doi: 10.1348/135910706X98524

Quality Assurance Agency for Higher Education. *David Willetts' address at We need to talk about Quality: MOOCs, 8 July 2013* [Online]. QAA. Available: http://www.qaa.ac.uk/Publications/Podcasts/Transcripts/Pages/David_Willetts_MOOCS_speech_8July2013.aspx [Accessed 19 Mar 2014].

Richardson, R. & Richards, D. A. (2006). Self-Help: Towards the Next Generation. *Behavioural and Cognitive Psychotherapy,* 34**,** 13–23.

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). Windsor, UK: NFER-NELSON.

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