Exploring the effectiveness of an interactive, technology enabled learning tool to enhance student knowledge in neonatal practice

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• PRESENTATION OBJECTIVES

• To outline a small-scale educational study exploring the use of interactive, technology enabled (TE) learning in neonatal nurse education

• To discuss the underlying rationale and context for the study

• To discuss and critique the findings in view of developing future work in the area of TE learning tools within this area of healthcare
• **STUDY OVERVIEW**

• Small scale study exploring whether an interactive, technology enabled learning tool increases knowledge and user satisfaction compared to traditional modes in a specific area of nursing – that of neonatal specific biology within this nursing specialty.
• **CONTEXT 1: THE NATIONAL PICTURE**

• Developments within *higher education*: E-learning / technology enhanced, self directed learning

• *Healthcare education* – Blended learning for pre- and post registration training, reduction in classroom hours – how to *scaffold* the gap between direct contact teaching and the self-directed ‘void’ (Yelland and Masters, 2007)
• CONTEXT 2: CITY UNIVERSITY & SCHOOL OF HEALTH SCIENCES

• Shifting emphasis from ‘teaching hours’ to student learning
• Improving the quality of student’s experience
• Listening to students and increasing measured satisfaction
• University Strategy
• CONTEXT 3: THE NEONATAL SPECIALTY

• Vast array of skills and knowledge to acquire at post-basic level within the speciality
• The need for blended learning using TE tools to cover all essential topics
• Neonatal specific biology is one example of an area of knowledge required to support practice that is not covered in the classroom setting
• THEORETICAL FRAMEWORK

• Self directed learning theory and principles of Andragogy (Knowles, 1980; Williamson, 2006; Zadvinskis, 2008; Cason et al, 2009)

• Cognitivism and Constructivist theory- both approaches refer to active engagement as a core principle (Grunwald and Corsbie-Massay, 2006).

• The link between interaction and engagement using technology; learning as an ‘active’ process

• Self-testing– self regulated learning and interaction with technology
LITERATURE REVIEW

- Research in TE learning abundant in HE and in specific areas of health (Bloomfield, et al, 2008; Towersey and Signal, 2008)
- Research comparing the effectiveness of TE learning tools compared to traditional methods (Moule, 2002; Vivekananda-Schmidt et al, 2004; Beers, 2005; Ridgway et al, 2007; Kaveevivitchai et al, 2009; Bloomfield at el, 2010; Lo et al, 2010; Ray and Berger, 2010; Dennison, 2011)
- Research into interactive, self-testing in health care (Lusk and Conklin, 2003; Nichol, 2007; Kromann et al, 2009)
- No online TE learning tool in neonatal care has been developed or available to date nor any related research in this field.
• **AIM OF THE CURRENT STUDY:**

• Does TE interactive self-testing have a positive effect on knowledge acquisition & user satisfaction in neonatal specific biology for post-basic nurses?

  – To explore the value of TE self-testing on learning and ascertain measured satisfaction of both the method and the tool itself
METHODS 1- SAMPLE AND RECRUITMENT

Convenience sampling – post-basic students attending the School of Health Sciences for neonatal CPD modules

– Less than 18 months in the neonatal specialty
– Previously working in adult nursing
– Not yet QIS (‘qualified in specialty)

31 subjects

Ethical considerations
• METHODS 2- DATA COLLECTION

• Mixed methodology
• Previous research informed methodology for current study

• 1- **Quantitative**– pre and post test scores of knowledge (based on the work of Schneiderman and Corbridge, 2009). + questionnaire responses (based on the work of Maag, 2004)

• 2- **Qualitative** – obtained from open responses
• **METHODS 3- DATA ANALYSIS**

• 1- **Quantitative** element – comparisons, descriptive and statistical analysis of pre and post test scores and questionnaire item responses.

• 2- **Qualitative** element – Data from open answers organised into themes (Thematic analysis model: e.g. Anderson, 2007)
• **RESULTS**

• Post-test Knowledge scores increased following *both* modes of learning – i.e. interactive *and* non-interactive resources

• There was no statistically significant difference in the change in scores between the 2 groups

• However, user satisfaction was consistency higher for the TE, interactive mode of learning in relation to 8 areas
# Pre and post test scores of knowledge

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<th>Paired Differences</th>
<th>95% Confidence Interval of the Difference</th>
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<td>Pair 1</td>
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User satisfaction questionnaire results

- 1 strongly disagree
- 2 disagree
- 3 neither agree or disagree
- 4 agree
- 5 strongly agree

[Bar chart showing the results for interactive and non-interactive options]
Preferred learning mode

- Interactive
- Non Interactive
- Both
• **DISCUSSION**

• Overall, no increase in knowledge comparing two modes – reasons? Is a combination better? Methodological issues to consider, individual learning styles

• Positive results in relation to user satisfaction however for TE, interactive learning for this topic of neonatal care – reasons? Active engagement in learning in a true self-directed way – self regulation is seen as beneficial
• STUDY LIMITATIONS

• Sample size
• Single group of students
• Methodological considerations
• IMPLICATIONS FOR FURTHER RESEARCH AND PRACTICE

• Development of an online resource on a range of topics using similar interactive format

• Ongoing Evaluation of the tools internally and externally – usage of e-learning tool using online evaluation and Google ‘analytics’

• Larger study focusing on other groups of learners
DISSEMINATION & EVALUATION

CONCLUSION

IMPACT  Significant potential for impact of TE tools for blended learning within the neonatal specialty

The importance of linking teaching/learning and research is highlighted

Student centered approach to the development of learning tools for blended learning -‘We want to encourage colleagues to increase engagement with their subject and bring the benefits back to our students’ (VC: City University 2012)
• Any questions?

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