

EVALUATING THE USE OF CONCEPT MAPS IN NURSE EDUCATION IN N. IRELAND TO PROMOTE THE DEVELOPMENT OF CRITICAL THINKING

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1 Introduction

Since September 2007, The University of Ulster has adapted a blended learning approach to the delivery of its Pre Registration BSc (honours) Programmes. The curriculum framework applies the concepts and values in pre registration nurse education through e-learning and face to face small group sessions.

Knowledge	Skills	Applied Values and Beliefs
Nursing and healthcare sciences underpinning practice	Objective judgement & decision-making	Innovations in practice
Theory practice relationship in theory practice	Governance and creativity	Person centred care
Global developments in care	Patient/client/colleague education and support	Applied ethical and legal principles
	Communication & clinical skills	Reflection

However, the researcher, who has been a Registered Nurse Teacher and University lecturer for some 20 years identifies similarities between this new style of learning and the previous methods of nurse education in that students struggle to “connect” modules and consequently demonstrate limited critical ability, a requisite of higher education. Critical Thinking in Nursing is a refusal to accept the status quo, the logarithmic thinking, the routine and ritual that has ear marked much of nursing practice over many decades. Things must make sense to and for the critically thinking student nurse, they must go together; and they must connect if true erudition is taking place. In the current environment of change and flux in healthcare worldwide, critical thinking and connected knowing is essential and ways of promoting this in nurse education must be a priority in order to prepare nurses for the diversity of roles and the variety of health experiences that await them.

2 Critical Thinking

In a quest to discover what critical thinking is the researcher has come across a vastness of definition with limited consensus (Ennis 1985, Adams et al 1996, Facione 1990, Boxler 2002, Riddell 2007). Continuing on this journey to unravel the mystery of critical thinking, the researcher uncovered a multitude of educational strategies that purport to facilitate critical thinking and conducted focus groups within one faculty to elucidate how university colleagues facilitate critical ability within their teaching methodologies. Confirming earlier findings, a wide diversity of classroom technique and a definite lack of consensus on either definition or best practice emanated from this small preliminary project. Critical Thinking (CT) as an outcome of nurse education is required in many countries but is merely implicit in the UK; yet CT is explicitly required in international nursing practice. (Mangena et al 2005). Whilst nurse educators differ on teaching and learning strategies that develop critical thinking abilities (Raymond et al 2004), it is suggested that an educational intervention is needed to bridge the gap between classroom teaching and clinical placements to develop CT nurses and CM may help in visualising the questioning and connected learning processes required in modern healthcare arenas.

2.1 *Concept Maps and Nurse Education*

The educational intervention for this research will be concept mapping (CM) for three main reasons:

- 1) Concept mapping is not widely used in nurse education on the island of Ireland or on mainland Europe although new literature is emerging from the USA on its validity and reliability (Hinck et al 2006)

- 2) The literature supports CM as important in higher education as it allows teachers to research students' prior knowledge and to document learning empirically whilst having little impact on overall teaching time. (KCL 2008)
- 3) Emerging literature suggests that concept mapping can be used to promote and evaluate critical thinking (Gul & Boman 2008)

Concept mapping is based on the constructivist theory of learning in which meaning is organised on a personal level with the teacher & CM as facilitators of this learning (ibid). Teaching strategies to improve critical thinking skills and knowledge construction are most effective when they actively engage the student (Maskey 2008).

CM is a teaching-learning strategy that can be used to evaluate a nursing student's ability to critically think in the clinical setting (Senita 2008). It has been used in disciplines other than nursing to allow the learner to visually recognise, reorganise and arrange information in a manner that promotes learning of concepts that interrelate.

It is suggested that CM is introduced into the Pre Registration Nurse Education curricula in the University as a matter of urgency, both as an educational intervention and an attempt to improve CT across the curricula. In the words of Kinchin (2008) "concept mapping makes more visible what teachers do to make learning happen" Certainly some intervention is required as Higgs and Jones (2000) remind us that within a rapidly changing health care environment and relentlessly increasing knowledge base, professional nurses need to develop critical thinking skills that will provide them with expertise in flexible, individualised, situation specific problem solving abilities.

3 Research Methodology

The research hypothesis is that there is a relationship between the use of concept maps (CM) and the development of critical thinking (CT) abilities. The aim of the study is to find out whether the use of CM to help students structure their learning will have an impact on CT.

The proposed study involves an ongoing literature review and three stages in the research process once all ethical and research governance guidelines have been approved and student participation agreed:

- I. An initial pre-test of pre-existing critical thinking skills for all volunteers in the adult branch 2006 cohort of Pre Registration students will be done using the California Critical Thinking Assessment Tool (CCTST) [August 2008]
- II. Introduce Concept Mapping as a teaching and learning tool to the experimental group i.e. all year 2 students on placement in peri-operative and critical care modules where the researcher is the link lecturer over the course of one academic year. Students are allocated to their clinical placements by the placement office; the link lecturer has no input into this process. Students will be taught nursing in the same way the lecturer has always taught in the clinical arena however Concept Maps will now be used as a framework to structure this learning within a holistic framework that connects all aspects of each individual patient. Students will be asked to connect their patients' symptomatic presentation within a concept maps in order to begin to understand their patients' holistic needs. All other students in the 2006 cohort who are not on placements where the researcher is the link lecturer will naturally form the control group.
- III. The discussions that take place initially will be no different to what is happening now in the placement regarding planning care for their identified patients. However in the research study, after each discussion in order to test understanding and recall, the student will be asked to develop a concept map of this discussion and submit this at the beginning of the next placement meeting. They may use the introductory concept map to develop their new map listing and connecting the key concepts involved in understanding their patient's problems holistically. Students will structure their map using the rules of concept mapping and over the course of a typical 6-week placement, 3 serial concept maps will be submitted for discussion and analysis.
- IV. In order to capture the students' reflections on the experience after each teaching session, each student in the experimental group will be asked to reflect on the use of concept maps in a 5-minute audiotaped interview that will be transcribed by the interviewer and validated by the student at the next meeting.
- V. A post intervention CCTST will be completed at the end of one academic year for all student volunteers. [August 2009]
- VI. Data Analysis

Quantitative Data:

- i. The California Critical Thinking Skills Test (CCTST) will be used as both a pre and post test baseline assessment of students' critical thinking skills.
- ii. Biographical Data will be collated and inferences drawn.
- iii. To compare pre and post intervention differences between the two paired samples, a Wilcoxon non-parametric t-test will be used to analyse data.
- iv. To compare the differences if any between the independent sample i.e. experimental and the control group, a Mann Whitney non-parametric test will be used to analyse data.

Qualitative Data:

Taped audio reflections will be transcribed by the researcher, validated by the participants and then analysed by the researcher using the Newell and Burnard (2006) six step pragmatic approach to thematic analysis

I. Timeframe:

Pilot study CM.....	June 2008
.Invitation via WebCT hyperlink to join study....	July 2008
Pre CCTST.....	July 2008
Continuous concept mapping for one year	August 2008-August2009
Post CCTST.....	September 2009
Analyze Data.....	September 2009 –January 2010
Write Up Research Findings.....	February-August 2010
Submit Research	(1 st)January 2011 , 2 nd June 2011
Present Research Findings to the 5th International Conference on Concept Mapping	

II. Research Implications

This research will go some way towards addressing the need to provide evidence of effective teaching strategies that promote and nurture critical thinking ability .The development of critically thinking nurses must be an explicit goal of European Nurse Education as it is in other countries and if Concept Mapping facilitates this process as the literature suggests it should be incorporated into UK nurse education curricula as soon as possible.

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