THE REFERENTIAL AND STRUCTURAL CONCEPTIONS OF
GROUP WORK LEARNING

by

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STATEMENT OF ORIGINALITY

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying subject to the provisions of the Copyright Act 1968.

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Shane E Dempsey
ACKNOWLEDGEMENTS

Within Australia, the Medical Radiation Science (MRS) professions only came to the higher education sector in the early 1990 and as such there were no research higher degree academics at the University of Newcastle when I started in 1993. There were no role models from the profession to draw from.

In the later part of the 1990s Helen Warren-Forward commenced as an academic staff member within Medical Radiation Science at the University of Newcastle. She was completing a Ph.D., and once completed, assumed roles and responsibilities, and worked at the level, of someone who I truly consider works as a university level academic. Her progression to Associate Professor is a testament to that. Helen has acted as my Ph.D. supervisor since I commenced this research, and she has drawn on her experience across a range of research positions within the University to provide me with advice that has made this research and Ph.D. better. She has offered advice about process, about structure, about statistics and the way to present data, and has provided consistent and high quality feedback in the drafts that have been presented to her. I'm glad she was my supervisor, and I thank her for her work. I'm glad she is my friend.

Shortly after commencing this research my life changed tremendously. I met Claire in early 2000, had lots of beautiful holidays with Claire, got married to Claire on Santorini in 2007, and had two beautiful girls with Claire; Neve and Eloise. My life is much far more beautiful now because of the three women that are in it. They (especially Claire) have given me both opportunity and support to complete this Ph.D. I love them, and owe my family everything that arises from completion of this Ph.D.
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<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>AIR</td>
<td>Australian Institute of Radiography</td>
</tr>
<tr>
<td>ASI</td>
<td>Approaches to Study Inventory</td>
</tr>
<tr>
<td>BMedRadSci</td>
<td>Bachelor of Medical Radiation Science</td>
</tr>
<tr>
<td>CLT</td>
<td>Conceptions of Learning Inventory</td>
</tr>
<tr>
<td>DR</td>
<td>Diagnostic Radiography</td>
</tr>
<tr>
<td>HREC</td>
<td>Human Research Ethics Committee</td>
</tr>
<tr>
<td>MSLQ</td>
<td>Motivated Strategies for Learning Questionnaire</td>
</tr>
<tr>
<td>MRS</td>
<td>Medical Radiation Science</td>
</tr>
<tr>
<td>NM</td>
<td>Nuclear Medicine</td>
</tr>
<tr>
<td>NSW</td>
<td>New South Wales</td>
</tr>
<tr>
<td>PBL</td>
<td>Problem Based Learning</td>
</tr>
<tr>
<td>RAs</td>
<td>Research Assistants</td>
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<tr>
<td>RT</td>
<td>Radiation Therapy</td>
</tr>
<tr>
<td>SPQ</td>
<td>Study Process Questionnaire</td>
</tr>
</tbody>
</table>
PAPERS ARISING FROM THIS THESIS


PRESENTATIONS ARISING FROM THIS THESIS


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ABSTRACT

The traditional context of learning in a University is that of a student engaged in learning and assessment as an individual learner (a solo learner), in a behaviorist model of teacher centered instruction. Most of the educational research undertaken which reviews students’ conceptions of learning and the qualitative outcomes of learning, has been undertaken in the solo learner context, in a direct instruction model of teaching. In the mid-1980s Australian workplaces identified the need for graduates to have a wide range of skills which made them highly adaptable to the modern workplace. These skills included those associated with working in teams. By the late 1990s Australian universities were introducing group work learning as a way to provide graduates with an experience in collaborative learning and social constructivist learning contexts. However, little research has been conducted that identifies the learning outcomes of group work learning.

The research reported in this thesis is undertaken entirely in the context of group work learning. Two studies were undertaken to explore the conceptions of group work learning, and the qualitative and quantitative analysis of the structural elements of group work learning, held by Medical Radiation Science students working in collaborative teams over an extended period of time.

Study 1 was a longitudinal study (1997-2002) where students, on completion of a 10 week group work learning poster development research task, responded to an open ended short answer questionnaire which asked them to identify their three most important learning outcomes as a result of undertaking the group work learning task. The topic of the group work research task was self selected by the student groups based on their mutual shared interest for the topic of study in an attempt to engage their intellectual curiosity about their academic and professional world. The questionnaire in study 1 was analysed for the conceptions of group work learning held by students, and the associated structural elements (content) of their group work learning, as described by their responses to the questionnaire. The questionnaire was undertaken on completion of the group work task, so that students could reflect on the entire learning process associated with the task. There were 328 students enrolled and eligible to complete the group work task during 1997-2002. In total 276 questionnaires containing 818 written responses were analysed in study 1.
Study 2 was a prospective study, conducted in 2008, which used a forced choice questionnaire developed entirely from the outcomes of study 1. The questionnaire required students to nominate from the list of learning outcomes the three most important things they learned in completing the group work task. Study 2 allowed the qualitatively described conception constructs uncovered in study 1 to be tested in a prospective close-ended questionnaire format. In 2008 there were a range of changes made to the group work task: these changes included reducing the time period to complete the task to 6 weeks, and loss of freedom to select the topic. Study 2 therefore allowed the research to compare any possible changes in the priorities of group work learning for students, from study 1 to study 2, when changes to the poster task were made. There were 148 students were enrolled and eligible to complete the group work task in 2008. In total 97 questionnaires containing 291 responses were analysed in study 2.

The analysis of the responses to the questionnaire in study 1 identified four conceptions of group work learning held by students. One of the conceptions was similar to conceptions of learning identified in solo learning contexts, and is associated with an ‘acquiring facts’ approach to learning, a surface level learning construct. The other three conceptions, ‘developing meaningful interpretations’, ‘negotiating social structures’, and ‘recognising expertise and creativity’ are associated with deep and meaningful learning outcomes and are strongly associated with both the process and outcomes of the social constructivist leaning environment that students engaged in to complete the task. Two of the conceptions have not been formally reported previously.

In terms of the analysis of the content of what students learned (structural elements of learning), five major categories of description emerged of which collaboration in learning (characterised by 5 sub-descriptions) was overwhelmingly the largest content learned. Study 1 also allowed for the analysis of the interest orientations of the students in undertaking their research project, as the topic of the task was driven by selected research group work project topic. This analysis demonstrated that students in different strands of the Medical Radiation Science professional programs (Diagnostic Radiography, Nuclear Medicine and Radiation Therapy), even with a large shared amount of academic content, develop interest orientations in line with a clinical profile of the professional degree they are enrolled in and which are significantly different from the other programs.
Study 2 identified that reducing the time to participate and complete the group work task, and removing the students' interest based choice of topic, to study to one which was selected for them, resulted in a change of learning priorities from study 1. In study 2, students indicated that they were more focussed on researching to get information to complete the project on time, and on learning about the topic, than they did in study 1. While collaboration in learning was still the number one structural element of learning its priority as a focus for group work learning was significantly reduced from study 1.

The results indicate that group work learning is a powerful learning environment which can provide learning outcomes that have been previously unidentified, and possibly unachievable, in the solo learning environment. The outcomes of group work learning are strongly associated with those graduate attributes identified as important in the modern Australian workplace.