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Coursework master's programmes: the student's experience of research and research supervision

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Although the coursework master's degree is becoming the principal conduit for the delivery of continuing education to the professions, it is one of the least understood or researched academic levels in higher education. Furthermore, little is known of coursework master's graduates' experience of research or research supervision following the completion of a thesis as the final assessment of their degree. This article measures graduates' experience of research and research supervision following the completion of a master's degree. The article also examines the relationship between coursework master's graduates' experience of research supervision, completing a research thesis and their development of research capabilities. The findings are considered in the context of the appropriateness of a thesis as the most suitable form of assessment for coursework master's degrees.

Introduction

In the past education for the professions was primarily at undergraduate level, due to the long-held view that a professional's initial education was sufficient for a lifetime's work. However, as professional associations, employers and governments introduced requirements for continuing education, the university sector has increasingly become involved in the development and provision of professional education, mainly through the provision of coursework master's programmes (Burgess 1997; Knight 1997; Atkins and Redley 1998; Cervero 2000). Athanasou (1997) has identified how coursework master's degrees are evolving and changing as they take a more central role in professional education, and now supersede research master's programmes in both their numbers and scope. The overall aim of these programmes is to bring practising professionals into contact with new knowledge and ideas (Eraut 1994; Cervero 2000), to improve professional practice for the benefit of society (Tovey 1994) and to further develop research skills (Anderson, Day, and McLaughlin 2006). Although coursework master's degrees have undergone extensive growth over the last decade, little is known of students' experience of research or research supervision, a central component of the degree. Furthermore, little is known of the factors that relate to the development of research capabilities as a consequence of completing a higher degree. The aim of this article is to measure the experience of students completing a thesis in part fulfilment of a master's degree in nursing in Ireland, and to identify the predictors of research skill development that occurred as a consequence of the degree.

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The master's degree

The Helsinki Conference on master's-level degrees (Helsinki 2003, 4 – an offshoot of the *Bologna declaration*) stated that students who are awarded a master's degree:

Must have achieved the level of knowledge and understanding, or high level in artistic competence when appropriate, which allows them to integrate knowledge, and handle complexity, formulate judgements and communicate their conclusions to an expert and to a non-expert audience. Students with a master's degree will have the learning skills needed to pursue further studies or research in a largely self-directed, autonomous manner.

It is evident that this definition is written for a wide audience, as it attempts to cover a range of master's degrees in arts, life sciences, education, engineering and health sciences. However, a number of core outcomes are identified that are attributable to professional master's programmes, such as the development of critical thinking and problem-solving abilities, the importance of self-directed learning and, consistently in documentation pertaining to the master's degree, the ability to undertake research. Although laudable outcomes, there remains a gap in how these outcomes are to be achieved, or how to measure whether these outcomes have been attained. Furthermore, the coursework master's degree remains the most under-researched of all degree levels (Reid, Rennie, and Shortland-Jones 2003; Tight 2003; Katz 2005).

Research and the master's degree

Universities have a dual function: the transmission of knowledge through teaching and the extension of knowledge through research (Graham 2002). Generally research taught at undergraduate level emphasises an understanding of the theory of research and the ability to critically analyse research reports. At master's level the process is toward the application and utility of research in professional practice, with the expectation that students undertake a research project as part of their programme of study. The majority of coursework master's programmes have as their final assessment a research thesis. In many cases this thesis, although classified as a minor thesis, comprises a substantial component of the programme, accounting for a significant input in terms of student time and resources. Generally, in coursework master's programmes, completed theses are usually between 10,000 and 20,000 words and students spend between four and six months on the thesis depending on institutional requirements, and on whether the student's mode of attendance is full-time or part-time (Atkins and Redley 1998).

The rationale and outcomes of completing a thesis as part of a coursework master's programme have scarcely been debated in the literature, with what little debate there is leading to uncertain conclusions. One argument espoused is that simply offering programmes that develop an understanding of research methodologies, without the completion of a research thesis, will significantly reduce the amount of research being undertaken by graduates, and their ability to undertake or understand research following graduation (Clifford, 1997; Cooke and Green 2000; Hardwick and Jordan 2002). On the other hand, it is questionable whether every graduate from masters' programmes will be required to carry out research in their professional roles. Even in the university sector there is a move toward the development of teaching-only posts, with a select number of staff identified as researchers (Cooke and Green 2000; Skilbeck 2001). There is also a move in some quarters in the USA toward an emphasis

on research utilisation in professional practice, with a de-emphasis on the master's thesis (Smith, Erkel, and Stroud 2002). The aim of this move is to concentrate on the development of researchers at doctoral rather than master's level. Therefore, alternative assessments of scholarship are being explored (Knight 1997; Smith, Erkel, and Stroud 2002). For example, Knight (1997) has identified a number of alternatives to the thesis. Taking the view that the thesis as a way of assessing an understanding of research in professional masters' programmes is artificial, Knight argues that there is a need to devise other types of projects that are more appropriate to the student's area of professional practice. Suggestions include action research projects and evaluation studies, with the emphasis placed on applicability of the assessment to professional practice.

However, the widespread use of the thesis as the final assessment of coursework master's degree has been identified as effective in the development of a number of student capabilities. Atkins and Redley (1998), following an analysis of 94 master's programmes in the UK, identified a number of skills and abilities that were perceived as being developed during and following the completion of a thesis, including the ability to work independently and critically, the ability to develop arguments, and awareness and use of advanced methodological designs that pertained to the student's discipline of study. Application of research to the student's field of study was found to be particularly important in professional master's programmes, where students developed the capacity to apply theory to practice through the thesis process.

Research supervision and master's programmes

Students undertaking research theses at master's level generally undergo a supervision process. Despite the importance of supervision in facilitating the completion of a thesis, there is a paucity of literature on the research experience of coursework master's students, with the majority concentrating on undergraduate research projects or PhD research supervision processes (Hill, Acker, and Black 1994; Youngman 1994; Heath 2002; Anderson, Day, and McLaughlin 2006). Despite this paucity, the evidence that does exist suggests that the quality of the supervision process can be variable for students. For example, Holdaway (1997) reports that in the Canadian higher education sector the quality of research supervision was found to be inconsistent. One of the main concerns was the lack of contact between the student and supervisor. An aspect identified as a means of providing quality supervision was the importance of supervisors being actively engaged in research. Other practices perceived to be most effective in assisting postgraduate students successfully complete their theses included: prompt feedback, providing balance between direction and independence, regular meetings, appropriate expertise of the supervisor, and ability to suggest alternative designs if problems arose.

Good-quality supervision and the completion of a research thesis have been associated with a number of positive outcomes from postgraduate education, including the development of personal and professional capabilities such as problem-solving, the ability to write, the ability to analyse, and the ability to plan and develop work (Conrad, Haworth, and Millar 1993; Orna and Stevens 1995; Atkins and Redley 1998; Demb and Funk 1999; UK Council for Graduate Education 2000). However, the majority of the evidence on the outcomes achieved as a result of the supervision process concentrates on PhD or master's by research degrees. There is little evidence

on the experience or outcomes of students being supervised throughout a professional coursework master's programme.

Methods

The aim of the study was to answer two questions: (1) what are coursework master's students' experiences of research and research supervision; and (2) is there a relationship between coursework master's students' demographic and pre-programme educational characteristics, the academic environment in which students are learning and the development of research skills?

Research design

The study design was a cross-sectional survey of graduates who completed a thesis as part of their coursework master's degree in nursing. The first part of the study measured graduates experience of research and research supervision. The second part of the study, based on Astin's (1993) Input, Environment, Outcomes (IEO) model, measured the relationships between student's demographic characteristics, educational experiences and the development of research skills.

Conceptual model

Astin's (1993) IEO model was used to explore the relationships between variables associated with the development of research skills in students who completed a thesis as the final assessment of their coursework master's programme. Astin's model has previously been used to measure the relationship between student characteristics, institutional characteristics and student outcomes at undergraduate level (Pike, Kuh, and Gonyea 2003). This is the first time the model has been applied to a coursework master's programme. Models similar to Astin's IEO approach, such as Bigg's (1989) presage, process and product model, have also been used to measure the relationship between learning environment and academic outcomes (Lizzio, Wilson, and Simons 2002).

Inputs in this study are defined as the pre-university demographic characteristics of the students. A number of student inputs have been identified as measures to enable both the prediction of student outcomes and as factors of statistical control (Pascarella and Terenzini 1991; Astin 1993; Pike, Kuh, and Gonyea 2003). The inputs included student's prior education, age, gender, academic qualifications, number of years qualified and level of financial support received.

The second concept, environment, refers to the actual experiences of the student during their time at university (this includes contact with academic staff, peer interaction, research supervision and the experience of the curriculum). Environmental measures equate to the processes that the student experiences during their course of study. In this study, environmental measures were divided into the students' perceptions of the structural environment and their perceptions of their educational environment. The structural environment was defined as those indirect processes that support the student during their degree, and include access to infrastructural support (suitable working space, access to appropriate software and access to computers), fee support, mode of attendance (part-time or full-time) and student's experience of their workload. The educational environment relates to the student's experience of the learning

processes, which includes the provision of clear goals and expectations related to the thesis, the thesis assessment process, the extent to which they were intellectually motivated through the completion of a thesis, and the process of research supervision. The rationale for choosing these predictors of student outcomes was based on an extensive review of the literature, that identified the impact that these variables have on student outcomes, and the ability to operationalise these concepts for measurement.

The final component of the conceptual framework, outcomes, related to the changes that occurred in students as a consequence of their programme of study. The outcome identified in this model was research ability, which was operationalised by the research skill development subscale of the Postgraduate Research Experience Questionnaire (PREQ) (Australian Council for Educational Research [ACER] 2000).

Master's programmes evaluated

The students evaluated were graduates of coursework master's degrees in nursing. The master's degree in nursing is a relatively new innovation in Ireland, with the first programmes commencing between 1999 and 2000. The aim of the degree is to prepare nurses to work in advanced levels of the profession, including management, education and advanced clinical practice. All master's programmes in Ireland at the time of the study had courses in research, and the completion of a research thesis as a central component of their curriculum.

Sample

A total of 322 students who had graduated between the years 2000 and 2005 with a coursework master's degree in nursing were surveyed. Students who had not completed or who had deferred their degree were excluded from the survey. Students were surveyed from all six institutions in Ireland that offered master's-level education in nursing. The vast majority of the students completed their programme on a part-time basis (86%), with the remainder completing on either a full-time or mixed full-time/part-time basis. In total approximately 20 courses were evaluated.

Measurements

The measures used in the IEO predictive model were operationalised by socio-demographic variables, the Postgraduate Experience Questionnaire (PREQ) (ACER 2000) and relevant subscales of the Course Experience Questionnaire (CEQ) (Ramsden 1991; Griffin et al. 2003). The rationale for choosing the PREQ and the CEQ was based on their ability to reliably and validly measure the constructs within the environment and outcomes components of Astin's IEO model, as well as both instruments being conceptually related. Furthermore, the PREQ is the only instrument available that specifically measures the process and outcomes of the student's experience of research and research supervision (ACER 2000; Drennan 2008).

The PREQ, which measures the research experience of students and the outcomes achieved by students who have completed a higher degree (PhD or master's degrees), was developed initially to allow Australian higher education institutions to evaluate their performance in relation to research supervision with other third-level institutes (ACER 2000; Marsh, Rowe, and Martin 2002). The PREQ contains six subscales, which consist of 28 Likert-type items (ranging from 1, strongly disagree, to 5, strongly

agree): supervision (6 items), intellectual climate (5 items), clarity (clear goals and expectations) (3 items), infrastructure (5 items), research skills development (5 items) and thesis examination process (3 items), and one further overall satisfaction item.

Two subscales from the CEQ, the appropriate workload and intellectual motivation subscales, were used as predictor variables in the model. The appropriate workload subscale consisted of four items (the workload was too heavy; the sheer volume of work to be got through in this course meant it couldn't be thoroughly comprehended; I was generally given enough time to understand the things I had to learn; there was a lot of pressure on me to do well in this course). The intellectual motivation subscale also consisted of four items (I found my studies intellectually stimulating; I found the course motivating; the course has stimulated my interest in the field of study; overall my university experience was worthwhile). Workload was included in the model as it has previously been identified as a predictor of the outcomes achieved by students following a programme of study (Astin 1993; Lizzio, Wilson, and Simons 2002). Furthermore, in all the programmes measured, the completion of a thesis was a major component of the programme and required a substantial effort in terms of student time and resources. Intellectual motivation was included as a predictor variable due the findings in previous research that master's degrees should be more advanced and sufficiently different from students' experience of their undergraduate degree (McInnis, James, and Morris 1995; Atkins and Redley 1998). In effect there should be sufficient depth in the programme to intellectually stimulate students.

Input variables in the model were classified under three areas; socio-demographic, professional and educational. Each of the variables measured has previously been shown to have an impact on educational outcomes. For example, socio-demographic characteristics, including gender, age and prior education, have been shown to have differing levels of impact on student outcomes – including ability, achievement and satisfaction – following a programme of higher education (Pascarella and Terenzini 1991; Astin 1993; Cabrera, Colbeck, and Terenzini 2001; Lizzio, Wilson, and Simons 2002; Richardson and Price 2003).

Environmental variables, or the processes that students experienced through college, were divided into two types; structural support variables and educational variables. Structural support variables included the provision of infrastructural support (operationalised by the infrastructural support subscale of the PREQ), the provision of fee support from health service employer, mode of attendance (full-time/part-time) and perception of appropriate workload. Educational process variables explored students' perceptions of the clarity of the research module, the examination of the thesis, the intellectual climate of the department, the students' experience of research supervision, and the extent to which they were intellectually motivated by their studies.

The outcome measure was identified as research skill development (ability to tackle problems through the use of research, the ability to present ideas in writing, the ability to analyse research, the ability to manage and plan work), which was operationalised by the skill development subscale of the PREQ.

Data analysis

Data obtained was analysed by computer using the Statistical Package for the Social Sciences (SPSS version 14.0). Both descriptive and inferential statistics were used in the analysis and description of the data set, through the use of univariate and multivariate methodologies. Descriptive statistics were used to summarise demographic data and

results from the PREQ. To aid interpretation of findings on the scales that comprise the PREQ, linear transformation of the mean score was conducted. In the instrument the scales 1 (strongly disagree) to 5 (strongly agree) used in the questionnaire were recoded to -100, -50, 0, +50, +100 respectively. This transformation was recommended by the developers of the instrument to aid interpretation and standardise comparisons (Ainley and Johnson 2000). Positive values indicate students are in agreement, negative values indicate disagreement.

Hierarchical multiple regression analysis was conducted to determine the linear combination of variables that best predicted the development of research ability. Hierarchical regression analyses allowed the researcher to determine the order in which the variables were entered into the regression equation. Therefore, the impact of the college environment, measured by examining structural supports and educational processes on student outcomes, was determined by controlling for student's pre-university characteristics, such as age, level of experience and gender. Predictions used in the model were at both categorical and metric level. Categorical variables – such as gender (male/female), mode of attendance (full-time/part-time), whether the graduate held an undergraduate degree or not, and fee support (yes/no) – were dummy coded using only zeros and ones (Field 2005).

Reliability of the instruments

All subscales from the CEQ and PREQ were found to be relatively reliable with internal consistency measures (Cronbach's alpha) ranging from 0.58 (workload subscale) to 0.91 (supervision subscale). The PREQ has previously been identified, through both exploratory and confirmatory factor analysis, to have strong construct validity when used to measure the research experience of master's in nursing graduates (Drennan 2008).

Ethical considerations

The six higher education institutes surveyed granted permission to access graduates from master's in nursing programmes. Direct access to student records was not permitted: however, the universities agreed to mail the survey instruments on behalf of the researcher. The Copyright Office of the Australian Government granted permission to use and reproduce the PREQ and the CEQ.

Results

Demographic profile of sample

A total of 322 graduates were surveyed, with 220 responding, resulting in a response rate of just over 68%. Table 1 outlines the profile of the sample.

The results are firstly presented in relation to graduates' experience of research and research supervision. The relationship between student inputs, the structural and educational environment and the development of research skills are then presented through regression analysis.

Graduates' experience of research and research supervision

Graduates identified the development of research skills as the area of greatest impact and outcome as a consequence of completing a research dissertation (Table 2). The

Table 1. Demographic, academic and professional profile of master's graduates.

Characteristic	<i>n</i> = 220
<i>Age in Years</i> mean, (standard deviation), (minimum–maximum)	38.5 (7.2) (25–56)
<i>Years Qualified</i> mean, (standard deviation), (minimum–maximum)	16.8 (7.3) (3–36)
<i>Gender (%) (n)</i>	
Female	85.8 (188)
Male	14.2 (31)
<i>Professional Qualifications* % (n)</i>	
Registered General Nurse	90.3 (195)
Registered Psychiatric Nurse	18.5 (40)
Registered Nurse Intellectual Disabilities	5.1 (11)
Registered Children's Nurse	16.7 (36)
Registered Midwife	25.0 (54)
Registered Public Health Nurse	4.6 (10)
Registered Nurse Tutor	29.6 (64)
Other	8.3 (18)
<i>Academic Qualifications* % (n)</i>	
Diploma	48.6 (105)
Higher/Postgraduate Diploma	50.0 (108)
Bachelor's Degree	69.9 (151)
Master's Degree	100 (220)
PhD	0.9 (2)
Other	14.4 (31)

*Graduates may hold multiple professional and academic qualifications

highest mean scores related to the development of skills in the area of analysis, problem solving and planning. High scores were also reported in the area of clear goals and expectations, which indicates that graduates had a good understanding of the standard of work expected in the thesis. However, graduates negatively rated a number of areas of their research experience. The lowest mean score related to the item financial support for research activities, indicating that graduates reported receiving little or no monetary support. The category with the lowest grouping of mean scores was the intellectual climate category. The results in this category indicated that graduates did not perceive that their department provided opportunities for social contact with other postgraduate students, that there was little opportunity for students to become involved in the broader research culture of the department, and that graduates had little opportunity to attend research seminars. Although positively rated overall, a number of items that examined the quality of research supervision received relatively low mean scores. These related to the graduates' perception that the provision of additional information by the supervisor to the student on their topic, guidance in the literature search and guidance in topic selection and refinement were less than satisfactory.

The individual items of the PREQ were summated into six scales which measured a number of aspects of graduates' research experience, including supervision, the intellectual climate of the department, research skill development, infrastructural

Table 2. Item scores* on the PREQ.

No.	PREQ scale/item	Item scores		
		Mean*	SD	n
<i>Supervision</i>				
1	Supervision was available when I needed it	46.77	59.42	217
7	My supervisor made a real effort to understand the difficulties I faced	44.68	64.21	216
13	My supervisor provided additional information relevant to my topic	0.47	68.50	212
17	I was given good guidance in topic selection and refinement	24.88	63.55	215
21	My supervisor provided helpful feedback on my progress	52.79	58.74	215
24	I received good guidance in my literature search	20.70	65.05	215
<i>Intellectual Climate</i>				
5	The department provided opportunities for social contact with other postgraduate students	-2.15	65.84	209
9	I was integrated into the department's community	1.46	56.51	206
16	The department provided opportunities for me to become involved in the broader research culture	-9.09	55.80	209
22	A good seminar programme for postgraduate students was provided	-0.24	59.22	207
23	The research ambience in the department stimulated my work	5.17	56.16	203
<i>Skill Development</i>				
6	My research further developed my problem-solving skills	62.21	38.50	217
10	I learned to develop my ideas and present them in my written work	56.22	38.13	217
14	My research sharpened my analytical skills	63.95	37.01	215
20	Doing my research helped me to develop my ability to plan my own work	62.15	41.31	214
26	As a result of my research, I feel confident about tackling unfamiliar problems	49.77	46.35	214
<i>Infrastructure</i>				
3	I had access to a suitable working space	44.75	50.48	200
8	I had good access to the technical support I needed	19.10	58.22	212
12	I was able to organise good access to the necessary equipment	36.10	49.90	205
18	I had good access to computing facilities and services	30.05	56.02	208
27	There was appropriate financial support for research activities	-18.91	66.57	195
<i>Thesis Examination</i>				
2	The thesis examination process was fair	53.04	49.43	214
15	I was satisfied with the thesis examination process	44.58	49.22	212
25	The examination of my thesis was completed in reasonable time	58.25	47.60	212
<i>Goals and Expectations</i>				
4	I developed an understanding of the standard of work expected	60.93	44.65	215
11	I understood the required standard for the thesis	54.61	47.40	217
19	I understood the requirements for the thesis examination	53.49	42.96	215
<i>Overall Satisfaction</i>				
28	Overall I was satisfied with the quality of my higher degree research experience	52.10	50.19	214

*Scores range from -100 to +100. Positive scores indicate levels of agreement; negative scores indicate levels of disagreement.

Table 3. Scale scores* on the PREQ.

Scale	<i>n</i>	Minimum	Maximum	Mean	SD
Supervision	211	-100	+100	31.08	51.16
Intellectual Climate	190	-100	+100	-0.42	46.05
Skill Development	213	-100	+100	59.01	29.71
Infrastructure	178	-100	+100	22.19	41.04
Thesis Examination	208	-100	+100	52.00	39.25
Goals and Expectations	213	-100	+100	56.26	39.39
Overall Satisfaction Item	214	-100	+100	52.10	50.19

*Scores range from -100 to +100. Positive scores indicate levels of agreement; negative scores indicate levels of disagreement.

support, the thesis examination process, goals and expectations, and overall satisfaction with the research component of their degree (Table 3).

The mean scale scores identified skill development as the highest outcome of the research process, followed by satisfaction with the provision of clear goals and expectations for the thesis. A high score on the skill development scale indicated that graduates identified that they had, as a consequence of their experience of research, developed problem-solving, analytical, planning and writing skills. A high score on the goals and expectations scale indicated that students had a good understanding of the requirements and standards for the thesis. Graduates were also satisfied with how their thesis was examined and the quality of research supervision and infrastructural support, but to a lesser extent than other aspects of their research experience. The graduates' lowest score was recorded on the scale that measured the intellectual climate of the department. This score was negative, indicating that respondents perceived that the academic departments in which they completed their master's degree did not foster integration into the research culture or research community of the department.

Predictors of the development of research skills

Hierarchical multiple regression was conducted to determine the linear combination of inputs, structural and educational environment variables that best predicted the development of research skill ability, following the completion of a thesis as part of a coursework master's degree.

In step 1 of the model, input variables (students' socio-demographic variables) were found to have no significant relationship with the development of research ability, explaining just 3% of the total variance on the dependent variable. In step two, when environmental structural variables were added, the provision of infrastructural support and appropriate workload had a statistically significant effect on research capabilities, accounting for 34% of the variance on the dependent variable. In the final step, environmental educational variables were added to the model. Infrastructural support, intellectual motivation and good research supervision had a statistically significant relationship with the development of research capabilities when input and structural variables were controlled for. The largest impact on the development of research capabilities was intellectual motivation followed by supervision. The total variance in the model explained by the independent variables was 62%.

Table 4. Hierarchical multiple regression analysis for variables predicting research skill development.

Variable	<i>B</i>	SE <i>B</i>	β
<i>Step 1</i>			
Constant	5.34	1.00	
Age	-0.06	0.04	-.39
Number of years qualified	0.06	0.04	.40
Degree holder	-0.32	0.19	-.14
Gender	-0.06	0.23	-.02
<i>Step 2</i>			
Constant	5.07	0.83	
Age	-0.06	0.04	-.41
Number of years qualified	0.06	0.36	.41
Degree holder	-0.14	0.16	-.06
Gender	-0.10	0.19	-.04
Infrastructure	0.01	0.01	.52***
Fee support	0.11	0.14	.05
Mode of attendance (part-time vs. full-time)	0.32	0.22	.10
Appropriate workload	0.01	0.02	.16*
<i>Step 3</i>			
Constant	3.81	0.69	
Age	-0.05	0.03	-.33
Number of years qualified	0.05	0.03	.33
Degree holder	-4.89	4.20	-.08
Gender	0.03	0.15	.01
Infrastructure	0.01	0.01	.20**
Fee support	0.04	0.11	.02
Mode of attendance (part-time vs. full-time)	0.31	0.17	.10
Appropriate workload	0.01	0.01	.06
Clear goals and expectations	0.03	0.01	.12
Thesis examination	0.01	0.01	.09
Intellectual climate	-0.01	0.01	-.05
Intellectual motivation	0.01	0.01	.40***
Supervision	0.01	0.01	.21**

Note: $R^2 = .03$ for Step 1; $\Delta R^2 = .34$ for Step 2; $\Delta R^2 = .62$ for Step 3.
 * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

The experience of research and research supervision

Nursing – as in other similar disciplines such as education, sociology, psychology and management – has experienced a substantial growth in the numbers of students undertaking coursework master’s programmes and, as a consequence, the completion of a supervised research thesis. Even though this thesis is classified as a minor thesis, students still experience supervision sessions, and the completion of the thesis

requires substantial input in terms of time and resources on behalf of both the student and the supervisor.

Overall, graduates were highly satisfied with their experience of research at master's level. Students also identified that they had developed a number of skills as a consequence of undertaking a research thesis, such as problem-solving and analytical ability, and the capacity to plan their work. These quantitative findings add to previous qualitative work in the area of the development of research capabilities, where it has also been identified that graduates from professional research degrees identified that analytical and critical thinking were a major outcome from their experience of research (Barnacle and Usher 2003). Graduates also identified that they were clear about the standards required for the thesis and what the thesis was trying to achieve. However, results were negative in relation to the extent graduates reported receiving funding for their research, and their level of involvement in the intellectual and research culture of the department.

Students were least satisfied with the intellectual climate of their departments. This included the finding that students had limited opportunities for contact with other postgraduate students, perceived that there was a lack of integration into the community of the department, and that there was little or no opportunity to become involved in the research culture of the department. Results from PREQ surveys in Australia have also reported low levels of postgraduate student satisfaction with the intellectual climate of their departments (Ainley 2001; Ainley and Harvey-Beavis 2002), and the findings here conclude that a lack of involvement in the intellectual climate of their department is the same for students regardless of whether they are completing course-work master's degrees or master's and PhD degrees by research. For example, in repeated surveys in Australia over the period 1999 to 2006, research graduates consistently expressed least satisfaction with the intellectual climate of their departments (Graduate Careers Australia 2006, 2007). In particular, when compared to science graduates, graduates from the humanities and social sciences had the lowest levels of satisfaction with the intellectual and research culture of their departments (Graduate Careers Council of Australia [GCCA] 2003). The organisation of research in nursing is very similar to the organisation of postgraduate study in the social sciences and, as suggested by the GCCA (2003), graduates are more likely to work on individual projects rather than team-based research projects, leading to a lack of integration into the research community of the department.

Another issue leading to the poor integration of students into the research culture of academic departments is their mode of attendance. Part-time attendance, which was the principal mode of attendance for nearly 90% of the students in this study, has been identified as being particularly problematic in integrating students into the research culture of a department (Garner and Wallace 1997; Brehony and Deem 2000). Garner and Wallace (1997) identified that part-time master's students in particular have reduced contact with lecturers, and lack the opportunity to explore issues and concerns in depth. However, the part-time nature of a programme does not necessarily preclude students from becoming involved in the intellectual climate of a department. A number of studies have highlighted the educational importance of integrating students into the intellectual and research climate of academic departments (Pascarella and Terenzini 1991; Astin 1993; Barnacle 2002; Jenkins and Healy 2005). For example, Astin (1993) highlighted that academic departments that were student orientated, and facilitated the integration of students into the culture of the department, had positive effects on students' affective and cognitive development, including high levels of

satisfaction with the overall experience of college, satisfaction with the quality of teaching and impact on the student's overall academic development.

Recently, a number of strategies have been identified that could facilitate and enable postgraduate part-time students to become involved in the intellectual and research culture of their department, including the introduction of group supervision, peer supervision (Dysthe, Samara, and Westrheim 2006) and the integration of research into the teaching curriculum (Jenkins and Healy 2005). In a report published by the Higher Education Academy in the UK, Jenkins and Healey (2005) outlined strategies that have been found to be effective in integrating research into the teaching environment, and enhancing the intellectual culture for students. The strategies presented are based on an extensive review of practices in universities in the USA, UK, Canada, Australia and New Zealand. Although principally intended for undergraduate programmes, many of the identified interventions can be applied to course-work master's programmes, and include departmental strategies to identify how research informs teaching, developing the capacity of staff to integrate research into teaching, designing the curriculum to facilitate student engagement into the research community and enabling students to develop an awareness of research at departmental level. Strategies that would directly have an effect on enhancing the intellectual climate for part-time postgraduate students would be the inclusion in the timetable of student-led research seminars and workshops. Research seminars could include presentations from previous students of their research dissertations, as well as programmes on publishing and disseminating student research (Jenkins and Healey 2005).

Dysthe, Samara, and Westrheim (2006) also identified the benefits of involving students in the research culture of the department through the utilisation of group supervision. This form of supervision was identified as a process where master's students had 'regular opportunities to participate in a forum where theoretical perspectives, methodological questions and practical know-how of the craft of research were being discussed at a level where they felt comfortable to contribute' (312). Furthermore, Dysthe, Samara, and Westrheim (2006) argued that group supervision facilitated the development of a dialogue between the supervisor and student, further allowing the student to understand and integrate into the research culture of the department.

Although graduates were generally positive about the quality of research supervision, responses were variable, especially in relation to the provision of information from the supervisor and advice received from supervisors on topic selection and refinement. The ability of a supervisor to suggest alternative designs when problems occur is one of the factors identified in the provision of a quality supervision process (Holdaway 1997). However, graduates did identify that they had regular contact with their supervisor and generally received comprehensive feedback. Prompt feedback, providing balance between direction and independence, regular meetings and appropriate expertise of supervisor are all factors that impact on student ability and satisfaction as a consequence of the supervision process (Holdaway 1997). Receiving good-quality research supervision has also been associated with the development of writing skills and the ability to self-assess the quality of research (Atkins and Redley 1998; Heath 2002; Dysthe, Samara, and Westrheim 2006).

Graduates identified a number of positive outcomes as a consequence of undertaking a research thesis, including the development of problem-solving skills, the ability to write, the ability to analyse and the ability to plan and develop work. These findings

from a coursework master's programme add to the knowledge from research master's and PhD programmes that the completion of a thesis at postgraduate level is effective in the development of a number of personal and professional capabilities (Conrad, Haworth, and Millar 1993; Orna and Stevens 1995; Atkins and Redley 1998; Demb and Funk 1999; UK Council for Graduate Education 2000; McCormack 2004).

The regression model identified that predictors of student outcomes in relation to research skill development were multifaceted. Students' access to good infrastructural support, their experience of good research supervision, and the intellectual motivation of the programme were stronger predictors of outcomes than pre-college characteristics, such as age, years qualified, gender and undergraduate educational qualifications. Similar findings are reported in the literature with undergraduate students. For example Cabrera, Colbeck, and Terenzini (2001) found that gains in generic abilities and occupational awareness were predicted by teaching practices over and above students' pre-university characteristics.

The finding that good supervision impacts on the development of research ability leads to the conclusion that the development of supervision skills should be a priority of the university; similar calls have been made in relation to investment in teaching at undergraduate level, and the impact that this intervention can have on learning outcomes (Lizzio, Wilson, and Simons 2002). Therefore, if input into teaching can lead to enhanced learning outcomes for students, it follows that input into the development of supervision skills can result in enhanced student outcomes at postgraduate level. However, as Marsh, Rowe, and Martin (2002) highlight, research supervisors receive little or no input on how to enhance and develop effective supervision skills.

Intellectual motivation was the principal predictor for the development of research skills and indicated that graduates perceived their master's programme, and the completion of a research thesis as part of the programme, as intellectually stimulating. Through exposing the student to advanced academic content and research issues that are pertinent to their professional practice, students developed abilities in research skills. Reid, Rennie, and Shortland-Jones (2003), in an extensive review of postgraduate students' satisfaction with their education, also found that students want the curriculum to have intellectual depth to justify its postgraduate status. Graduates in this study, as in Reid's analysis, were more likely to develop enhanced outcomes when they perceived that their experience of research was intellectually stimulating, and their courses strived to achieve a balance between intellectual stimulation and workplace applicability through the provision of stimulating, challenging and engaging research work. Students who enter a master's programme want to experience a level of education that is substantially different from their undergraduate experience. Not only should the content be substantially different, but also the delivery, assessment and application to the world of work should be of a quality that enables students to develop higher order thinking skills. Atkins and Redley (1998, 391) identified that intellectual motivation at master's level can be developed through a combination of 'independent learning, scholarship, critical self-reflection, and the application of knowledge in and to "real life" contexts'. In this case the completion of the thesis was identified as being intellectually stimulating and, it could be argued, was the factor that substantially distinguished the graduates' experience of postgraduate education from their experience of undergraduate education.

Although this study identified positive outcomes as a result of undertaking a dissertation, there are differing views regarding the value and need for students to

complete a dissertation at master's level (Santos, Willett, and Wood 1998; Ashworth, Gerrish, and McManus 2001). Ashworth, Gerrish, and McManus (2001) have commented on differing views on the value of the dissertation amongst lecturers in nursing in the UK. On the one hand, there is an argument that postgraduate students do not need to conduct research, but should rather develop the ability to critically analyse and apply research findings to their professional practice. However, there is an opposite view that coursework master's students should complete a research study, not only for the development of professional practice but also to enable the students to develop a comprehensive and realistic understanding of research. There is an argument that simply offering programmes that develop an understanding of research methodologies, without the completion of a research dissertation, may reduce the ability of graduates to undertake or understand research following graduation (Clifford 1997; Cooke and Green 2000; Hardwick and Jordan 2002). Even though the majority of graduates from coursework masters' programmes will not follow a career in research, there are, it is argued, many gains to be made by completing a research dissertation. The gains identified in this study included the ability to understand research methodologies, the development of skills and cognitive skills, and the ability to plan and organise work. These capabilities can be applied to professional practice. Due to the growth of the master's degree, and the need to ensure relevance to professional practice aligned with the development of graduate qualities, it is acknowledged that there is a need to explore alternative methods to the dissertation. However, the completion of a dissertation or thesis at master's level has been acknowledged as a 'defining feature' of master's programmes (Atkins and Redley 1998, 391). Generally, the outcomes achieved by graduates as a consequence of completing a dissertation match the research and generic capabilities identified by key policy documents on outcomes from research training published in the UK, Australia and the USA (Council of Graduate Schools 1990; Council of Australian Deans and Directors of Graduate Studies 1999; UK Council for Graduate Education 2000; Council of Australian Post-graduate Associations 2004).

Conclusion

The findings from this study suggest that the completion of a minor thesis as a component of a coursework master's degree leads to positive student outcomes in research ability and applicability. Not only were substantial gains made in graduates' understanding and application of research to professional practice, but also, as a consequence of the thesis, graduates developed the ability to write and to plan their work, and developed problem-solving and analytical capabilities. The supervision process undertaken by graduates as a requisite of their degree was also a significant mediator of graduates' academic development. The removal of a thesis as a component of a coursework master's degree could negatively impact on the development of research capabilities at graduate level, and the applicability of these capabilities to the graduate's professional practice. It is acknowledged that supervising minor theses adds to the workload of academics. However, innovative strategies such as group supervision, research seminars and the presentation of real-world research problems can be used as effective strategies to reduce this burden. Furthermore, this research has identified that an understanding of research, research methods and data analysis is enhanced when students have to negotiate access to research sites, develop data collection methods and analyse research collected in real-world settings. There is

strong pedagogical utility to maintaining a thesis as part of a coursework master's programme.

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