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Higher Education Research and Development Society of Australasia, Inc.

Enhancing Higher Education, Theory and Scholarship

Proceedings of the

30th HERDSA Annual Conference [CD-ROM]

8-11 July 2007
Adelaide, Australia

Suggested format for citing papers:

Author (2007) Title of Paper, in *Enhancing Higher Education, Theory and Scholarship, Proceedings of the 30th HERDSA Annual Conference [CD-ROM]*, Adelaide, 8-11 July.

Published 2007 by the
Higher Education Research and Development Society of Australasia, Inc
PO Box 27, MILPERRA NSW 2214, Australia
www.herdsa.org.au

ISSN 1441 001X
ISBN 0 908557 72 8

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Improving undergraduate nursing students research competence and confidence through a mentoring project

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The 'Mentoring Project' program began as an alternative stream within a final semester topic of the Bachelor of Nursing degree at Flinders University. The aim was to: develop students' skills to undertake a literature review and a poster for potential publication and conference presentation; encourage students to apply evidence to answer clinical research questions; match students with academic and clinical mentors to support their work; build students' capacity for introducing change based on their findings and develop their interest and confidence to undertake Honours and doctoral studies. This paper describes the impact of this program on students' passion for these scholarly activities.

Three cohorts (2004 to 2006) of mentoring project students (n=60) were questioned on project experiences, confidence to undertake research and interest in pursuing further studies. Conference and clinical presentations, published papers, enrolments into Honours and doctoral programs were also measured. Findings and illustrative quotations are highlighted in this paper.

The students found the project sufficiently challenging, increasing their interest in undertaking research, Honours or doctoral programs (one already enrolled) and influencing their strategies for changing practice. Creative thinking and problem solving abilities increased resulting in a quadrupling of Honours enrolments and University Medal recipients over the last two years. Further, national and international conference presentations, co-authored refereed publications and clinical/community venue presentations have grown exponentially.

A major contribution to student scholarship has been made at one University since 2003. The management team is currently working with partners to introduce the Mentoring Project within other national and international universities.

Keywords: mentoring program, undergraduate nursing students, scholarly research activities

Introduction

Mentoring is commonly used as a way of improving outcomes for individuals and organisations, particularly where there is disadvantage, but no literature reports the use a collaborative academic and clinical mentoring program that encourages passion for clinical research, further study and publication among undergraduate nursing students. Further, high-achieving students are rarely encouraged to extend their intellectual talents in nursing, and

tend to pursue clinically based practice certificates rather than research degrees. Furthermore, developing skills for publications and presentations are often not priorities as students approach registration. Consequently, many schools of nursing nationally have small number of applicants for Honours programs and few become recipients of the University Medal. This dearth of Honours students is of major concern to nursing bodies and Universities.

Undergraduate nursing students globally, are renowned for questioning the relevance of research to practice. Ax & Kincade (2001) demonstrate this issue in a small UK qualitative study of 12 nursing students. The students met (and sometimes were a part of) resistance to change based on research evidence found amongst health professionals in the health units. Some of the students felt that research skills were theoretical and would not help them to function in their practice effectively. Yet some still indicated a greater interest in undertaking research after a few years of practical experience. Ax and Kincade recommended emphasising the importance of evidence based practice, teaching students strategies to deal with resistance to research on the wards and underlining research skills as transferable to other topics and practice. Bjorkstrom et al (2002) undertook a survey of 201 Swedish nursing students' attitudes towards research and development within nursing. The single greatest influencing factor in positive attitudes occurred when students held a particular interest in a research field of nursing. Yet again these authors found that the students did not consider research and development to be a part of the nursing profession and were sceptical about the applicability of nursing research in the daily activities of their practice.

In response to these concerns the Mentoring Project, an innovative teaching and learning program, was developed during 2003 within the Bachelor of Nursing pre-registration program in the School of Nursing and Midwifery (school) at Flinders University. Dorsey and Baker (2004) defined mentoring as 'a planned pairing of a more experienced person with a lesser skilled individual for the purpose of achieving mutually agreed upon outcomes' (p260). In 2004 the Mentoring Project became an alternative stream within the final semester managed by a team comprised of the leader, Dr Lindy King, Dr Jane Neill, and Ms Kerry Taylor who is based in Alice Springs. Dr King and colleagues are responsible for supporting students, collaborating with mentors and ensuring continuity, ongoing development and expansion of this project.

The combination of research applied to nursing practice and working with high achieving nursing undergraduates are the defining features of this mentoring project. Its aims are to raise the profile of research in health care areas, contribute to clinical practice improvement and evidence-based health care, and stimulate students' interest in future Honours-level and post-graduate study. Each student is allocated one academic mentor and at least one clinical mentor identified by a clinical venue or recommended through the University. Academic mentors are experienced lecturers in the school and clinical mentors are skilled clinicians, all of whom are interested in research, scholarship, and practice improvement. The Mentoring Project assessment requires students to develop a 5,000 word literature review that is potentially publishable in a peer-reviewed publication, and a professional poster about their chosen research issue for display in practice locations and/or conferences.

Key elements of the Mentoring Project are: matching undergraduate nursing students with academic mentors and clinical mentors from students' final semester practice contexts; developing closer links between health services (Industry partners) and academics, by modelling collaborative relationships that facilitate student learning (leading to student access and graduate employment in a range of non-traditional areas such as operating theatres,

critical care and remote health services); encouraging students to use critical thinking strategies in locating, appraising, and applying evidence to answer research questions drawn from real clinical situations; managing the project in a variety of clinical contexts including remote, rural and metropolitan health care settings, in line with faculty and school teaching and research strengths and expanding students' capacity to identify strategies for clinical change (the latter is required within the review assignment).

Further features of the project have been to encourage and develop the students skills to disseminate findings of their projects via clinical venue and conference presentations and publications and build students' confidence and ability to undertake further study at Honours and post-graduate level using their mentoring projects to initiate the research process. Since its inception in 2004, the Mentoring Project has had a powerful impact on these students' scholarly activities, increasing their appreciation of research and applications for Honours in the school. Eleven of these students have entered the Honours program, four have completed thus far and received the University Medal, 18 have given national or international conference presentations and four have co-authored publications in peer-reviewed journals. It is the outcomes of the mentoring project in terms of the students increased confidence, interest and ability to undertake these scholarly activities that is the focus of this paper.

Literature review

The bulk of articles published on mentoring programs in nursing are descriptions of innovations in curriculum. In contrast an integrative literature review Dorsey and Baker (2004) found 16 research studies published between 1992 and 2003 on mentoring of undergraduate nursing students. Surprisingly none appeared to be related to the teaching of nursing research they offer a useful 'structure, process and outcome framework with which to critique mentoring programs. Their overall conclusions were that mentoring programs were positively related to academic success and psychosocial development of students and that mentoring contributes to students retention and graduation from their program.

The descriptive articles on curriculum innovation figure the use of types of evidence based research papers such as developing research questions around 'sacred cow' routines of practice (Callister et al 2005), reviews of literature (August-Brady 2005, Callister et al 2005, Beal et al 1989), practice development papers (Callister et al 2005, evidence based research papers (Sheriff & Chaney 2006) or abstract presentation (following a review of the literature (Beal et al 1989). Others describe the use of full development of a research proposal in conjunction with community partners (Rash 2005). Participation in a research study as a hired research assistant (Callister et al 2005, Ravert et al 2004) or as unpaid research assistant on a project (Sheriff & Chaney 2006, Callister et al 2005, was advocated as effective ways to mentor students. A range of levels of formal spoken/powerpoint presentations were utilised by authors. Some were to a group of students and faculty (Beal et al 1989) and/or nursing/community staff (offering the opportunity to improve practice via nursing clinical leadership) (August-Brady 2005, Rash 2005).

Poster presentations to interested staff and students (August-Brady 2005) and college wide poster presentations (Callister et al 2005) were also described within these programs.

Conference poster presentation (1 with faculty) and co-authoring of 3 publications with faculty was only noted by Callister et al (2005) where students had undertaken the projects as part of graduation with Honours. Evaluations of the mentoring programs were undertaken by written comments from students (Callister et al 2005, August-Brady 2005, Beal et al 1989) or oral (Sheriff and Chaney 2006, Rash 2005, Ravert et al 2004) and described as highly

positive. Few authors described embedding the ongoing mentoring program activity in the undergraduate curriculum rather they seemed dependent on faculty sponsored research projects to function (August-Brady 2005, Callister et al 2005).

Byrne and Keefe (2002) undertook a review from 1990 to 2001 to explore how mentoring can be used to build research competence in nursing in various professional and geographic settings. They suggest that research mentoring is 'much more likely to occur in graduate nursing education. This was supported by Rash (2005) who noted students intended to seek grant funding to undertake proposed research when at graduate level but would need faculty assistance and mentorship to meet 'institutional review board' requirements which was not discussed further. Finally and significantly, Byrne and Keefe (2002 p 395) note 'successful research mentoring at any level requires resources and traditional mentoring requires experts, money, and an institutional support system'.

Methods

The first year of the mentoring project was accompanied by a extensive research study that sought interview data from the students through a focus group and individual interviews, data from clinical mentors through questionnaires and data from the management group and 2 other members of academic staff through a nominal focus group. The final step of the 2004 mentoring project involved an exit student questionnaire conducted by the students academic mentors. These questionnaires were analysed in 2005 by the project team leader (LK) who found they offered such rich data that a further request was made to the ethics committee for approval to retrospectively ask the students for permission to include this data in the research study. Permission was granted and the 2004 students were approached retrospectively and asked if their questionnaire data could be used in the study. This step began an offshoot of the original larger study involving a three-year survey of the first three cohorts of undergraduate nursing and health science students participating in the mentoring project.

The aim of this arm of the study was thus to gain the students' perceptions of the program, the collaborative supervisory model, working with mentors and outcomes in terms of the students presentations in the clinical venues, conference presentations, publications and particularly their progress into Honours and doctoral studies. This paper presents the data related to the students dissemination of the findings of their projects via clinical venue and conference presentations, publications and building students' confidence and ability to undertake further study at Honours and post-graduate level using their mentoring projects to initiate the research process.

Sample

The sample of this study involved the total population of 60 third year students who entered the mentoring project between 2004 and 2006. Forty-six students from the three cohorts gave their consent to participate in the study, a response rate of 76.7%.

Ethical considerations

Ethics approval was sought and gained from the University's ethics committee for the undertaking of this study. The students were informed about the research study that was occurring in parallel with the mentoring project program. Each student was given an information sheet and a consent form and asked to hand in the signed consent form to the project leader if they wished to participate in the research study. It was made very clear that their participation was entirely voluntary. A research assistant undertook the survey following

the first year as it was felt that the students would feel more able to speak freely when approached by a person outside of the project teaching team. She contacted the student after receiving the signed consent forms to organise a time for the student to complete the questionnaire.

Data collection technique

Semi-structured questionnaires assessed students' experiences of the project, their confidence in undertaking future research and their interest in pursuing further studies. Objective outcomes were also measured and these included the number of conference presentations, published papers, enrolments into Honours and doctoral programs and dissemination sessions to clinical venues undertaken by the students.

Data analysis

The closed questions were analysed using descriptive statistics and quotations that accompanied the students responses have been used to illustrate these findings. The outcome measures have also been analysed and summarised to provide contextual understanding of the impact the mentoring project has had on their scholarly achievements.

Findings

The analysed data focused around the following areas: students dissemination of the findings of their projects via clinical venue and conference presentations, publications and building students' confidence and ability to undertake further study at Honours and post-graduate level using their mentoring projects to initiate the research process. Evident from students responses were the following findings.

Students' clinical and community venue presentations

An increase in students' confidence to disseminate findings to industry partners was demonstrated through 27 presentations in clinical/community venues to nursing and/or multidisciplinary groups.

'I have come out from behind some safety barriers that I liked to hide behind, especially public speaking, now I know I can do it!' and

'My nursing home has been through accreditation and the restraint free work [mentoring project]went over well with the assessors. We have been asked to present our processes and information at the Aged Care Standards Agency Better Practice Awards in a few months. Part of this will be my research review and poster'

Students' conference presentations

Students and graduates have presented a total of 8 posters and 10 oral presentations at national and international health care conferences from 2005-2007.

'The project has allowed me to learn about conference presentation skills and the importance of networking with people who have expertise in the field.' And

'12 months later, my lecturer submitted my work to the Royal College of Nursing Australia to be considered for a poster presentation at their national conference. It was more of a surprise to hear that they do want me to present. The work I thought was finished once I left university had continued on'

Students' publications

Four students and their academic mentors now have joint publications in journals that reflect their field of clinical interest. These students now have greater confidence to publish in the future.

'Due to your much appreciated assistance with my first article, which gave me much of my confidence in my abilities, I am working on my next article - sleep, bed rest and activity in residential aged care. Fingers crossed'

Students' confidence and ability to undertake further research

Students indicated more interest in undertaking research after taking part in the Mentoring Project (77% in 2004, 83% in 2005 and 67% in 2006). *'Yes, the clinical potential is now more obvious'*

Students' confidence and ability to undertake at Honours or post-graduate studies

Students noted that the Mentoring Project had increased their interest in undertaking Honours or postgraduate studies (from 41% (before the project) to 71% 2004, from 50% (before the project) to 83% 2005 and from 17% (before the project) to 92% in 2006).

'I want to pursue this topic in Honours, it is a long held passion and I now have greater confidence'

Eleven students involved in the Mentoring Project have enrolled in Honours Programs which increased the number of school Honours students by 400% each year (2005 & 2006) in contrast to the years prior to 2003.

Two further students have progressed into postgraduate studies. One participant undertook a graduate certificate in health in 2007. A further student having completed Honours in 2006 has now commenced a doctoral program in 2007, building on her Honours work. Three further mentoring project students have completed Honours in the same research field and indicated they will commence doctoral studies building on their research work in 2008-2009. Many other mentoring project students have indicated they will enter post-graduate studies in the future for example,

'...I'm doing a Master of Business Administration next year [2008]'

Students' success with University awards and scholarships

Four participants have been awarded the University Medal, which recognises them among the top 5 students across the Faculty after the 2005-2006 Honours (the highest form of student award within the university programs). These are particularly pleasing results as in the previous 10 years only two students from the school had received a University Medal.

Mentoring project students received 4 of the 9 Faculty of Health Science Honours scholarships between 2005- 2006 where they compete with School of Medicine applicants for the award.

Three Mentoring Project student profiles provide examples of graduates' progress

Profile 1: A 2004 mentoring project student undertook a mentoring project on cultural safety while concurrently on a clinical placement within a remote Indigenous community. She presented on her project as part of the symposium at the Royal College of Nursing Australia conference in Alice Springs in July 2004. Following graduation the student successfully applied for a position in the Northern Territory's Chief Minister's office (in relation to Indigenous health policy). In 2005 she was awarded a Faculty of Health Sciences Honours scholarship and began a part-time Honours program focused on exploration of Indigenous health policy due for completion in July 2007. The graduate was

then recruited to a position in the Prime Minister's Indigenous Policy Unit in Canberra where she has since received a promotion.

Profile 2: This 2005 Mentoring Project student an Indigenous Norwegian (Sami) had experienced a variety of occupations before undertaking the Flinders undergraduate nursing program initially in Norway and the last two years in Australia. She completed her mentoring project while on a remote clinical placement in the Northern Territory. This experience along with developing research skills prompted this student to complete the Honours program focusing on how Sami RNs' experience culture in their practice. The student received a first class Honours, the University Medal, an Australian Postgraduate Award scholarship and entered the doctoral program in 2007 focusing on the cultural experiences of Sami and Indigenous Australian nurses in their practice.

Profile 3: A 2006 Mentoring Project student worked for many years in the discipline of Engineering, business and teaching in Carnegie programs before entering nursing. He developed a passion for men's health and was motivated to focus his mentoring project on men suffering from prostate cancer. His concurrent clinical placement on a urological surgical ward allowed the student to peri-operatively care for men undergoing radical prostatectomy. The student presented his poster at the Mentoring Project poster presentation (November 2006), the school's research summit (December 2006) and at the International Urological Conference (Adelaide February 2007) where he received the 'Best New Presenters' award. The student has commenced a full-time Honours program focusing on men's experiences of potency following radical prostatectomy under the supervision of a nurse specialist and urologist. He intends to commence a PhD in 2008 building on his Honours work with the guidance of his current supervisors.

Discussion

So far the outcomes of this mentoring project have been very successful and led to the executive of the school making the decision to fund this project as a permanent arm of the final semester topic. Thus funding on a long term basis is assured. Our attentions are now on expanding on these trends and developing strategies that will encourage more nursing students into the Honours and doctoral programs. We are developing more information sessions about Honours and the mentoring program in the first and third year of the undergraduate program, more Honours scholarships with interested organisations and encouraging employer support for the students to undertake these programs (e.g. paid study time, paying more on completion of degree).

We are also developing ways to help more nursing students attend conferences to present papers and posters through a University supported student conference costs support scheme, mentors alerting student to upcoming conference and assisting with them with development of a conference abstract, presenting at the conference with their mentor as support, and mentors taking the student's poster to the conference or giving a paper on the student's behalf if unable to attend

Further strategies for helping students co-author manuscripts for potential publications are also in development with potential summer vacation scholarships (November to January) before commencing employment as a RN in development.

A further goal is to work with partners locally, nationally and internationally to apply the mentoring project in their schools. *Within the school:* we received a request by the school's midwifery program coordinator to commence the Mentoring Project with Bachelor of Midwifery students from semester 1, 2008. *Other university schools within Australia:* We are currently negotiating with another Australian undergraduate nursing program to adapt the

mentoring project for their needs and are due to commence shortly. *Application to university schools outside of Australia:* In 2006, our mentoring project was adapted and used in a school within Norway. Currently a school of nursing in the UK is exploring how they might apply the Mentoring Project to their curriculum. This is posing an interesting challenge as unlike the schools in Australia and Norway this UK university have a different set of curriculum requirements with a 50% clinical component. It is likely in this case that the mentoring project will be situated in a clinical topic and may then become the vehicle to demonstrate how students use research evidence to inform their current clinical practice.

Finally it was important to us to make sure the other students undertaking their final semester would not miss out on opportunities found in the mentoring project. Thus all students are given the opportunity to develop poster and literature review skills during the undergraduate program, they are given the same opportunity to co-author papers with an academic member of the school and are offered the same opportunity to enter the Honours and post-graduate programs.

Conclusions

The Mentoring Project has made a major contribution to scholarship of learning and teaching at one University where entry into Honours programs has quadrupled since 2003. Undergraduate nursing students have been guided to critically appraise and synthesise research evidence and disseminate their findings at conferences, develop literature review skills to publishable level and be confident to progress into Honours and eventually doctoral studies. The project management team is currently networking with potential national and international partners to roll out the Mentoring Project at other universities.

Acknowledgements

We acknowledge the assistance of the Flinders University Vice-Chancellors Teaching and Learning Innovation grant scheme, Primary Health Care research and development SARNet scheme and the Flinders University School of Nursing and Midwifery. Without their support the mentoring project would not have been possible to resource.

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