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Advancing a Program of Research within a Nursing Faculty Role

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Abstract

Doctoral students and new faculty members often seek advice from more senior faculty on how to advance their program of research. Students may ask whether they should choose the manuscript option for their dissertation or whether they should seek a postdoctoral fellowship. New faculty members wonder whether they should pursue a career development (K) award and whether they need a mentor as they strive to advance their research while carrying out teaching, service, and practice responsibilities. In this paper, we describe literature on the impact of selected aspects of pre and postdoctoral training and faculty strategies on scholarly productivity in the faculty role. We also combine our experiences at a school of nursing within a research-intensive university to suggest strategies for success. Noting the scarcity of research that evaluates the effect of these strategies we are actively engaged in collecting data on their relationship to the scholarly productivity of students and faculty members within our own institution.

Keywords

nursing; doctoral; students; research; faculty

When It comes to advising doctoral students and new faculty members on advancing their program of research, the published evidence on which to ground this advice is admittedly weak. In a systematic review of literature on the promotion of faculty research productivity, Segrott,

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McIvor and Green (2005) found limited research. Descriptive studies of strategies such as having a mentor revealed satisfaction, but few were designed with comparison groups to explore the impact of having a mentor on scholarly productivity (Byrne and Keefe, 2002). In this paper, we report literature that describes some of the more common strategies for advancing one's research career in the faculty role. We also combine our experiences as researchers in a school of nursing within a research-intensive university to offer additional advice in this regard. This article is an attempt to challenge doctoral students and new faculty members to think more intensively and creatively about their career in nursing research and to challenge faculty members and administrators to more aggressively promote and support the research scholarship. Recognizing the limitations of the current literature and of our own perspectives, we are currently measuring the impact of some of these strategies on the scholarly productivity of our own doctoral program graduates and faculty members.

Research within Academic Nursing

The American Association of Colleges of Nursing (AACN) has identified four aspects of scholarship important in academic nursing: discovery, teaching, applications in clinical practice, and integration of ideas from nursing and other disciplines (AACN, 1999a). While the emphasis on each aspect will vary among universities, these categories of scholarship are common across academic nursing. Faculty members often find themselves engaged in research in more than one of these areas. Promoting scholarship of research is essential to maximize nursing knowledge development, to incorporate research into our educational programs, and to translate research findings into nursing practice. In 2002, the National Institutes of Health (NIH) began the "NIH Roadmap", a series of initiatives that identified gaps in biomedical research that required the expertise of more than one discipline (National Institute of Health & Office of Portfolio Analysis and Strategic Initiatives, 2007). Significant NIH funding has been dedicated to championing a new approach to research in the health sciences that takes an interdisciplinary team approach. Learning to lead and be a member of interdisciplinary teams engaged in research is one of the most critical areas of development for a new nurse scientist. Many strategies that we recommend deal with goal setting, time management, and collaborating with other scholars; these strategies can be applied across the four aspects of scholarship identified by AACN.

Doctoral and Postdoctoral Education

A limited number of studies have linked doctoral program characteristics with the research productivity of graduates. A cross-discipline sample of 1,104 tenure track faculty found that faculty who had research assistantships while in graduate school produced more publications and were awarded more research dollars than their counterparts (Porter & Umbach, 2000). Heavy course workload negatively impacted research productivity but did not outweigh the positive effect of a predoctoral research training experience. In nursing, among predoctoral trainees funded by the National Institute of Nursing Research during 2001 – 2003, those with individual training awards were more likely to subsequently secure research (R) or career development (K) awards than predoctoral trainees with institutional training awards only (National Research Council, 2005).

In a single institutional report, a summer-only doctorate program was discontinued because of evidence indicating a lack of research opportunities and sustained mentorship experiences, and less than desired socialization into the scholarly role (Sakalys, Stember, & Magilvy, 2001). Research productivity of summer-only graduates was 10 percent lower than that of graduates attending during the academic year. Factors such as the diverse characteristics of students (ability, motivation and background) and nursing doctoral programs (process and structural) coupled with study design limitations (need for control groups, longitudinal studies and multi-

institutional studies) create challenges in developing studies leading to causal inferences (Sakalys et al., 2001).

The Manuscript Option versus Traditional Dissertation Format

We found only one article describing the manuscript option for doctoral students in schools of nursing. Sources, including School of Nursing websites (see Appendix A) and an unpublished dissertation (De Jong, Moser, & Hall, 2005), indicate that at least 10 schools are now offering the manuscript option to their students. This option, which takes the place of the traditional five-chapter format of the dissertation work, as described by De Jong et al. (2005) and the websites that were reviewed, requires that the student write two or more manuscripts based on the dissertation work in combination with some aspects of the traditional dissertation format. Criteria for completing the dissertation may be acceptance of the manuscripts for publication or that they are judged as worthy for publication by the dissertation committee.

The main advantage of the manuscript option is that it allows for a more efficient use of the student's time by having the student organize his/her dissertation report from the outset as a series of manuscripts. Also, because the manuscripts are completed while the student is still enrolled, it is likely that the student will still have access to the assistance of his/her advisor in developing the manuscripts. The final advantage is that the manuscripts are developed before the student has graduated and taken on the responsibilities of a new position. Many new faculty members find it challenging to publish a paper from their dissertation once they are absorbed in learning how to teach several new courses, participating on committees, and engaging in consultation or other practice-related activities. These faculty may also be engaged in pursuing research funding, and publication of dissertation findings is a very important step in this process.

Students who select the traditional dissertation format should write at least one paper based on their dissertation findings as soon as possible after graduating; ideally, before taking on the responsibilities of a new position. If this is impossible, the student should try to set aside time each week to work on a paper or papers from the dissertation work. The assistance of the student's former dissertation advisor may be obtained via e-mail and phone if the student desires and the advisor is agreeable. But it is advisable to have as many details addressed before the student is geographically separated from the advisor and both individuals become absorbed in the many activities that can easily engulf faculty.

Postdoctoral Fellowships

Many Schools of Nursing, Medicine, and Public Health at research-intensive universities have federally-funded institutional postdoctoral fellowships that train nurse scientists and those from other disciplines in specific areas of research. Individual postdoctoral awards not tied to a specific institution are also available through the National Institutes of Health (NIH). These fellowships provide new scientists with time and developmental experiences to increase their research expertise before taking on the responsibilities of the nurse faculty role. Fellowships may include additional coursework or the opportunity to participate as a member of one or more research teams. This is also a time when the individual can focus on publishing data-based manuscripts, networking with other scholars in the field, and preparing an NIH-funded career development award (K Award) or an investigator-initiated research award application (R series).

Similar to the findings of predoctoral trainees funded by the National Institute of Nursing Research during 2001 – 2003, during this same time period, postdoctoral fellows with individual awards were more likely to subsequently secure research (R) or career development (K) awards than postdoctoral fellows with institutional awards only (National Research

Council, 2005). While most federally-funded fellowships are intended for and limited to U.S. citizens/permanent residents, those who are not eligible for these fellowships (e.g., international students) may consider applying for foundation grants or grant awards through professional societies to support their training.

Seeking and Securing a New Faculty Position

Tenure-track appointments in nursing are rarely solely teaching or research. Although a faculty member may select one or the other for greater concentration, each faculty member is expected to identify research topics and lead interdisciplinary teams in obtaining funding and conducting research, while simultaneously supporting the school's mission to educate students in the nursing profession. Hence, it is essential to select the best possible research environment for a faculty appointment and to use all available resources to manage the continually competing priorities once in this role.

Evaluation of the Trajectory of a Program of Research

When evaluating a new faculty applicant or recently hired faculty member for rank, appointment and promotions committees in schools of nursing examine the trajectory of the individual's program of research. This refers to the pace of research productivity over several years. There are certain milestones that are commonly examined in new doctoral graduates applying for research faculty positions such as whether an individual published findings from his/her dissertation, has had a postdoctoral fellowship (with a certain degree of proven scholarly productivity), and has a plan for the advancement of his/her program of research. Some schools have shown a preference for hiring junior faculty who have completed postdoctoral fellowships (Con, Porter, McDaniel, Rantz & Maas, 2005). An individual who completed a postdoctoral fellowship would be expected to be further along in their research trajectory than one coming directly into academia following doctoral studies. Co-authored publications during doctoral study, one or more publications based on the dissertation work, completion of a postdoctoral fellowship with additional publications, and success in obtaining small grants would be considered a positive trajectory of research in a new faculty applicant.

Environments that Promote the Responsible Conduct of Research

When interviewing for academic positions, it is important for the newly graduated doctoral student to inquire about environmental factors related to the responsible conduct of research. A 2004 report of the Office of Research Integrity (ORI)(Office of Research Integrity, 2004) revealed that the two most common types of research misconduct reported were fabrication of data and falsification of data. Fabrication involves making up data; falsification involves changing existing data. An article in the journal *Nature* suggested that inadequate mentorship of new scientists and perceived high levels of stress related to pressures to maintain a high level of scholarly productivity were common reasons for these types of scientific misconduct (Breeding Cheats, 2007). When interviewing for faculty positions, new scholars should ask about the type of research and teaching mentorship provided to new faculty members and about faculty workload including teaching and committee responsibilities. Research-intensive universities usually provide education on the responsible conduct of research and close mentorship of new scientists in this area. Barriers to research productivity and strategies adopted by academic settings to overcome these barriers are summarized by Conn et al. (2005)

Career Development Training Awards (K-Awards)

As they interview for faculty positions, students should ask about the extent to which a school supports NIH-funded career development (K) awards among faculty members. These awards are designed to support the further development of new nurse scientists or a seasoned researcher who is changing research focus. If the applicant is not presently in a faculty role, an offer of a

faculty appointment is required. The Dean must confirm that the award recipient will be given a limited teaching assignment so that 75% of the recipient's time may be spent on research or related scholarly activities. These awards provide support for up to three years, and the applicant's school must be committed to this training. While most K-awards available for researchers in their early career provide support for mentored training only, the NIH Pathway to Independence (PI) Award (K99/R00) is unique in that it also supports professional effort and research for clinician researchers following the mentored phase (National Institute of Health, 2007). The PI award provides the same level of support (75%) for the recipient's time.

Finding a Good Mentor(s)

A systematic review of the literature on research mentoring in nursing was reported by Byrne and Keefe (2002). There were many models of mentoring described in the literature and the model selected was influenced by the presence of research mentors available within an institution. For example, Mundt (2001) reported that at a school of nursing lacking in research mentors, securing external nursing research mentors led to satisfaction among the mentees. In another study, new faculty members in the same institution reported being more productive when working with others (Jacelon, Zucker Staccarini, & Henneman, 2003)

A good mentor can assist the mentee in multiple ways such as providing advice on a program of scholarly development, offering opportunities for this development, and engaging other scholars in mentoring and collaborative activities. Many new scholars have more than one mentor in order to foster growth in different areas. In all cases, it is important for both the mentee and their set of mentors to have a clear understanding of the roles and responsibilities of each in advancing the mentee's career. Because senior scholars who are the ideal mentors are generally extremely busy individuals, having an agenda and being prepared to discuss specific goals and progress towards these goals when meeting can make for a more productive use of time. Having a research mentor, either formal or informal, with less seniority than the senior mentor can also be helpful as this type of individual may be closer to the mentee's level and can offer pragmatic suggestions for career development and advancement as well as important insight into the academic environment. Involving multiple mentors and interdisciplinary mentorship can help to broaden perspectives.

Building a Mentoring Team of Peers

New scholars can form a team of individuals with a common interest, such as developing a postdoctoral or K Award application. By working together, group members can critique each other's work and hold each other accountable for moving forward toward a common goal. If more advanced expertise is needed than the group possesses, it is possible to invite more senior faculty members or other consultants on an ad hoc basis to provide guidance on topics such as certain type of research methodology or statistical analysis

Turning Presentations into Publications or Other Career-Enhancing Opportunities

It is a common error of doctoral students and new faculty members to give several scholarly presentations at professional conferences throughout the year but not go on to develop these presentations into publications. Presentations at international and national conferences make a contribution to the profession and allow for networking with other scholars, but their value in terms of promotion and tenure is less than that of peer-reviewed publications. Publications are peer reviewed and will reach a wider audience. Therefore, making a planned effort to transform presentations into peer-reviewed publications is not only a way to make presentations a more effective and fruitful scholarly activity, but also a better approach to the dissemination of research findings.

Doctoral students or new faculty members can accelerate becoming part of the community of scholars in their area of expertise by contacting senior scholars who will be attending the same research conferences and asking if they have time to meet during the conference. Establishing such relationships can lead to helpful consultations and collaborative research in the future. Conferences are also the ideal time to maintain existing professional relationships by planning to meet to discuss any ongoing projects in person. These meetings can provide fertile ground for generating research and funding ideas. Recording new ideas developed at each conference in a folder and documenting mutually-established project timelines with potential collaborators is one way to keep these new ideas from slipping away.

Writing Journal Articles Instead of Book Chapters

Doctoral students or new faculty members are often invited to publish a chapter in an edited book. The opportunity to author a chapter in a book that has the potential to make a significant impact on the profession is worth the time and effort. However, writing book chapters should not replace data-based and theoretical contributions to peer-reviewed journals. Peer-reviewed publications demonstrate that the researcher has made a significant contribution that will advance knowledge as judged by other scientists in the field. Books are generally not peer-reviewed. Because chapters are of longer length and have a greater time between submission and press than journal manuscripts, they take longer to write and often no longer present cutting edge information by the time the book is published. The time required to write a lengthy chapter is particularly important to consider as there is an opportunity cost for time invested in such a project. Two or three journal manuscripts may be produced in the time that it takes to write a book chapter. If a new scholar is uncertain about how to evaluate such choices, this is a topic worthy of discussion with a mentor.

Mining Scholarly Opportunities through the Use of Existing Study Findings

A great deal of work goes into the design and conduct of a study. By collaborating with investigators of similar studies, it is possible to find additional uses for study data beyond the original purpose of the study. For example, if other investigators have used a similar instrument in different populations, aggregating the data collected from multiple studies could be used to develop a manuscript on the reliability and validity of the instrument across populations.

Maintaining Resilience and Persistence

For new scholars, having a manuscript rejected or a grant unfunded can be devastating. It is important to realize that even leaders in their field have these same experiences. At first, it may be hard to manage this type of rejection. Some find it helpful to concentrate on other tasks for a period of time. Once the negative emotions of disappointment and frustration have passed, reviewer critiques should be read carefully before resubmission. Additional advice and support may also be obtained from senior scholars. Examining reviewer comments across several papers for consistent comments is an effective way to identify writing skills that may need strengthening. Participating in writing or scientific review groups is another way to build and exercise writing skills. Persistence usually pays off.

Developing Grantsmanship

Grantsmanship is the art of successfully acquiring research funding. There are many ways to develop skills in grantsmanship. Research mentors can provide input on research ideas and appropriate funding agencies for a particular idea or for the stage of the new scholar's career. Also, many universities and research conferences offer continuing education programs on grant writing. Many funding agencies including NIH provide online guidelines on how to write and prepare a grant application (National Institute of Health & National Institute of Allergy and Infectious Disease, 2007). The purpose of the grant must be reviewed carefully to ensure that

the research idea matches the objectives of the grant. Grant officers at both federal agencies and charitable foundations are often willing to advise prospective applicants on the research idea and all aspects of the grant application. It is extremely important to follow the grant guidelines regarding the required elements of the grant and page limitations. Other faculty members in the school who have been funded by the targeted organization may be willing to share their successful grant application as an example. Many schools offer a formalized internal grant review by senior faculty members (Conn, et al., 2005; Yoon, Wolfe, Yucha & Tsai, 2002). This is most helpful especially if the faculty members have served as grant reviewers or are past recipients of grants from the targeted agencies. Applying to more than one agency (although funding can only be accepted from one agency for the same project) also increases the potential for project funding in an increasingly competitive environment.

Securing Small Grants to Support the Applications for Larger Ones

It is nearly impossible to obtain a multi-million dollar grant from agencies such as NIH without a history of success in obtaining and being productive with smaller grants. New scholars should first seek funding within their school, university, professional organizations, or foundations. Having pilot studies or small studies funded that result in one or more publications will give evidence to reviewers of larger grants that the applicant will be productive if funded.

New scholars should be very cautious when obtaining funding from commercial vendors that do not have the same peer review mechanisms in place that support the responsible conduct of research as academic institutions and other research organizations. It is important to avoid even the appearance of bias or questionable scientific objectivity in scholarly work and develop a reputation as a scholar of the highest integrity. Applicants should not seek or accept funding from a source for which they could be seen as having a conflict of interest. Should such a case occur, the responsible conduct of research must be assured throughout the research process by detailing the nature and degree of the conflict of interest in any relevant materials (e.g., consent form, manuscripts, conference abstracts). Also, it is important to decline to sign agreements which give the funding organization unlimited rights over the publication of papers generated from the project. Editorial assistance from the funding organization that is so extensive that it is in effect, "ghostwriting" should be declined (The World Association of Medical Editors, 2005)

Scheduling Time for Writing and Research

New faculty members are often so overwhelmed with the responsibilities of teaching several new courses, advising students, or committee responsibilities that they do not have time for other scholarly activities. It is important to schedule time for writing and research, and opportunities to build in these activities along with other professional obligations should be considered when applying for and comparing faculty offers and contractual agreements.

Developing a Research and Publication Team that Works across Multiple Projects

Highly productive scholars often have a few close colleagues with similar research interests with whom they conduct research and publish throughout their career. With this type of team approach to scholarship, made up of members either within or external to the institution, one may be a principal investigator on one study and a co-investigator on the study of one of the team members. Authorship privileges and responsibilities are ideally discussed at the outset of each project. This team approach is a way of increasing one's scholarly productivity exponentially.

Using Communication Technology to Maintain a Command of the Literature

Communication technologies can aid scholars in staying abreast of the latest literature. For example, it is possible to automate a search of multiple scientific literature databases using key words or author names so that results are delivered via e-mail at selected time intervals to the requester. There are also several reference management software packages that allow the user to store references in databases and easily insert them into manuscripts as they are being developed. These packages allow for instantly reformatting references in another reference style if a manuscript is being revised for submission to a journal that uses a different format for documenting references. School or university librarians are usually the best source of this type of technology or other literature review aids and may also offer instruction in their use.

Developing Long and Short-Term Goals to Advance as a Scholar

At the start of each year, new scholars should set measurable goals for the year. For example, creating a list the papers to be published that year and the authors to be involved along with manageable deadlines may be an effective strategy. Annual goals should be reviewed with mentors for how they lead to achieving five and ten-year goals. The criteria for promotion from assistant professor to associate professor and from associate professor to full professor should be referenced to provide a framework for establishing short and long-term goals. Mentors within the school can offer advice on effective goal-setting strategies. Some schools provide formal external mid-rank reviews. This process involves sending the faculty member's Curriculum Vitae (CV) to an outside expert in the field to obtain advice on what the faculty member should do to meet the criteria for the next rank. Other schools provide similar advice internally, individually or in the form of informational sessions to advise faculty and doctoral students on how to prepare their application for appointment or promotion. If the school does not have a formal process for this, the faculty member can seek out leaders in the same field of expertise and request advice on what activities or accomplishments are needed to advance in rank and as a leader in the profession.

Maintaining an ongoing record of scholarly productivity such as publications, presentations, peer review activities, committee memberships, and community service is essential. It can be challenging to try to remember the details of these activities at the end of the year when preparing for an annual evaluation or at the end of several years when preparing for promotion or to apply for a leadership position. Making it a point to update one's CV on a regular basis can be helpful.

Saying "no" Judiciously

Knowing which opportunities to accept and which to decline requires good judgment. Highly productive faculty members have described the importance of avoiding activities that are not a worthwhile investment of their time (Norbeck, 1998). Mentors can offer advice in this regard. Advancing in the nurse faculty role requires leadership in school and university committees, professional organizations, and community service. Focusing on one's program of research to the exclusion of these other aspects of the faculty role could be seen as a lack of leadership, but agreeing to too many of these opportunities could lead to over-commitment and decreased productivity in research and publication. Finding ways to incorporate one's program of research into teaching, service, and practice responsibilities as an integrated scholar is the ideal as is saying 'yes' to activities that involve work that builds important skills that can be applied to activities necessary to advance one's career.

Engaging Doctoral Students as Members of the Research Team

In addition to seeking out the mentorship of senior scholars and working collaboratively with peers, new scholars should consider inviting doctoral students or even motivated students at

undergraduate or graduate levels to participate as research team members. They can offer much needed help to a busy scholar and will, in turn, benefit from learning about all aspects of the research process. Our experiences also demonstrate that the number of scholarly products (presentations, manuscripts) related to these projects can also be facilitated through student contributions. Mentoring others is not only the responsibility of all scholars; it is also an opportunity to forge lifelong collegial relationships with future nurse scientists or scientists from other fields.

The Importance of Scholarly Graciousness in All Endeavors

The advancement of science requires the constant and rigorous critique of the ideas and work of peers. The art of providing critical yet constructive comments in a clear and productive manner serves to improve the grant applications, manuscripts, and abstracts reviewed. Critical comments that are too vague to offer direction for improvement or are unnecessarily negative have the potential to dishearten new scholars in particular, and impede the advancement of science.

Graciously crediting those who have contributed to a scholarly product in an acknowledgement or in the provision of authorship opportunities as appropriate, demonstrates that the new scholar understands the extent to which his/her work has been advanced through the work of many others. Establishing authorship responsibilities and privileges at the outset of any project is a sign of fairness and collegiality. Creating opportunities for students and other junior faculty who work as part of a research team to make a contribution that is worthy of authorship is one sign that a new scholar has transitioned to a more senior scholar role. Finally, every scholar has a long list of "lessons learned". Keeping track of these and sharing them freely will add greatly to the development of others. The advancement of science is dependent upon the willingness of scientists to provide opportunities and share knowledge and experiences with the next generation of scholars.

Conclusion

The first few years after doctoral education are an exciting but challenging time for many reasons. As the AACN (1999b) stated, "to adequately address today's health problems the integration of researchers and research programs into schools of nursing, and the assimilation of nurse researchers into the scientific community must occur." The challenges of developing a program of research for new scientists in faculty positions are to embrace the scholarship of research and empower themselves to acquire or sharpen the skills necessary for leadership in the academic and scientific community.

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Appendix A

School of Nursing Websites Describing the Manuscript Option (Retrieved on July 29, 2007)

- Johns Hopkins University
http://www.son.jhmi.edu/academics/academic_programs/doctoral/phd_handbook.pdf
- Rutgers <http://catalogs.rutgers.edu/generated/nwk-grad/pg5373.html>
- South Dakota State University <http://learn.sdstate.edu/nursing/PhDHandbook.html>
- University of Buffalo
http://nursing.buffalo.edu/documents/SON_DOCTORAL_HANDBOOK.pdf

University of Iowa

<http://www.nursing.uiowa.edu/students/resources/documents/PhDSECTION.pdf>

University of Kentucky <http://catalogs.rutgers.edu/generated/nwk-grad/pg5373.html>

University of North Carolina

http://nursing.unc.edu/current/handbook/doc_dissertation.html#11a

Wayne State University <http://www.bulletins.wayne.edu/gbk-output/gen10.html#45227>