Students' Research Self-Efficacy During Online Doctoral Research Courses

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ABSTRACT

This study will explore student skill development and research self-efficacy as related to online doctoral students' first core research course experience. Findings from this study will be used to inform instructors in effective ways to support doctoral students during their early research experiences. This support will ensure that online graduate students will develop well-crafted dissertations and following graduation, continue to conduct research. The original research design was a grounded theory study where both qualitative and quantitative data were to be collected prior to students starting the course and following course completion. It was proposed to collect data through interviews, observations in the form of documented online discussions and correspondences, and the Research Self-Efficacy Scale (RSES). Course grades and final research outline projects were supposed to be examined to determine student mastery of key concepts. A convenience sample was to be drawn but due to a low response rate, the authors decided to apply an exploratory case study method and use this as a pilot to inform a larger study. The final result of the case study analysis will be detailed descriptions of each case with discussion of categories and themes along with the exploration of commonalities and differences.

Keywords: Research self-efficacy, online graduate students

INTRODUCTION

Many graduate students in education and the social sciences have concerns about learning research concepts. In addition, many fail to master key concepts needed to prepare them for designing dissertations and future studies at a doctoral level. Anxiety and doubt can greatly interfere with students' ability to learn and master research concepts. Research has shown that low research self-efficacy can interfere with students' research training and practitioners' willingness to conduct research and add scholarly contributions to their field of study (Love, Bahner, Jones, & Nilson, 2007). Research has also shown that high research self-efficacy is an important factor related to students successfully conducting research and pursuing research beyond graduate study (Forester, Kahn, & Hesson-McInnis, 2004). In online graduate schools it is important to ensure that the first core research course experience provides the needed support and mastery experiences to enhance research self-efficacy in graduate students. It is also important to understand the personal factors that interfere with student learning in online research courses. Online courses present a particular challenge in research training because the courses may not work naturally with students' specific learning styles (West, Kahn, & Nauta, 2007).

PURPOSE OF THE STUDY

The purpose of this study is to understand factors in doctoral students' first core research course experience that enhance student skill development and self-efficacy related to handling future research projects and courses. Factors that may serve as obstacles to learning and research self-efficacy will also be investigated.

RESEARCH SELF-EFFICACY

Bandura's (1977, 1982, 1986, 1995, 1997) concept of self-efficacy as applied to research can be defined as confidence in carrying out research activities from organizing a research plan to carrying out the research process from library research and reading to writing and publication (Holden et al., 1999; Lei, 2008; Uranu & Beck, 2004). Self-efficacy is a good predictor of behavior and research self-efficacy is particularly useful in identifying the forces at work in career choices for graduate students regarding whether or not they will engage in research formally in their work (Mullikin, Bakken, & Betz, 2007).

Nationally, American doctoral graduates lack interest and experience in research and once they secure a faculty position, spend little time on research (2009 National Survey of Student Engagement). Yet, "people form enduring interests in activities in which they view themselves to be efficacious and in which they anticipate positive outcomes" (Bard et al., 2000, p. 48-49). Thus, as students, these same doctoral graduates perhaps viewed research courses with negative associations that led to diminished amounts of time spent in and effort spent on research courses and projects (Lei, 2008; Papanastasiou, 2005). Research courses that bridge prior learning with new applications for and motivation to conduct research may be the road to building research self-efficacy in graduate students. In fact, high research self-efficacy has been connected to both future research involvement and higher research productivity (Bard et al., 2000; Bieschke, 2006; Lei, 2008).

Self-efficacy in research for graduate students appears to begin with positive experiences in the early research design courses. This is parallel with Bandura's (1986) understanding of cognition as a social phenomenon a la Vygotsky in which a structural network of influences either supports or undermines cognition. This structure is created within research courses, and has certain important self-efficacy building/undermining capacities. In fact, this structure forms "self-perceptions of capability [that] help determine what individuals do with the knowledge and skills they have… and what knowledge and skills are acquired in the first place" (Pajares, 1995, p. 2). Therefore, the authors of this study understood the research courses to be important public spheres of cognition in which people's behavior would be "both mediated by their beliefs about their capabilities and… [better] predicted by these beliefs than by the results of their previous performances" (Pajares, 1995, p. 4). For that reason, this study assumes self-efficacy as the construct by which the potential for student research capabilities in their graduate school career and beyond are viewed.

RESEARCH QUESTIONS

Within a pilot exploratory case study the following research questions are explored.

1. What aspects of the course experience contribute to the development of necessary research skills?
2. What aspects of the course experience interfere with development of necessary research skills?
3. What aspects of the course experience contribute to students' research self- efficacy?
4. What aspects of the course experience interfere with students' research self- efficacy?
5. What role did personal factors play in this self-efficacy development (learning styles)?

ORIGINAL RESEARCH DESIGN

The original research design was a grounded theory study where both qualitative and quantitative data were to be collected prior to students starting the course and following course completion. It was proposed to collect data through interviews, observations in the form of documented online discussions and correspondences, and the Research Self-Efficacy Scale (RSES) developed by Kathy Bieschke (1996). Course grades and final research outline projects were supposed to be examined to determine student mastery of key concepts. Within this grounded theory study, researchers would have analyzed data using inductive procedures where codes "emerge" from the data. Data from the initial qualitative questionnaires would have been coded to determine which students entered with research concerns and doubts about how they would perform in the course. Data from the end of course qualitative questionnaires would have been coded to determine which students experienced key skill development and positive perceptions of their course experiences. Data relevant to key factors that enhanced or inhibited learning would have been coded. Course grades and final research outline projects would have been examined to determine student

mastery of key concepts. All qualitative data would have been coded using approaches outlined by Glaser and Strauss (1967), Strauss and Corbin (1998), and Charmaz (2006). Coding procedures and justifications would have been presented in great detail as would have been justifications for codes. The RSES scores would have been tabulated and examined in relation to qualitative findings.

Following the specific procedures for this approach, findings should have provided key themes and a resulting theoretical model, which would enable instructors of online research courses to enhance research self-efficacy and skill development in their students.

CHALLENGES WITH ORIGINAL RESEARCH DESIGN

Approximately 60 Walden University students from the PhD in Education program were invited to participate during the 2008 implementation. A convenience sample of students that agreed to participate was selected. To the authors' surprise, the response rate was much lower than common response rates in this kind of research study even though the authors assumed that beginning doctoral students would realize the opportunity offered to them by participating in this study. During the first quarter that the study was offered to students, only four participants volunteered and completed the pre-test with two completing the post-test. After the same study was offered once again during the next quarter, the participants grew to 10 volunteers but only 5 of those completed the post-test survey.

Through informal conversations with students and a presentation of this research design to a small roundtable of graduate students and colleagues (Baltes & Hoffman-Kipp, 2009), the authors learned that online doctoral students realize the importance of participating in this study but were just overwhelmed with the demands of their personal life, work, and their doctoral program. Participating in this study would have been an additional task that seemed meaningful but plainly impossible. This was an interesting finding in itself which only stressed the importance of considering the population of online graduate students. The authors of this study came primarily from traditional universities and traditional programs, having worked as research assistants over the years, thus, having opportunities that online doctoral students do not have.

MODIFIED RESEARCH DESIGN

Due to the limited number of participants and the need to further test plans for data collection and synthesis, the authors decided to apply an exploratory case study method and use this as a pilot to inform a larger study. Going forward, the authors will recruit students through the Walden University Participant Pool. The Participant Pool is made up of many Walden students across disciplines. Consequently, this study will be open to all students across the university that are in their first year research course, and not only doctoral students in education.

The final result of the case study analysis will be detailed descriptions of each case with discussion of categories and themes along with the exploration of commonalities and differences. The question guiding the case study is: What elements contribute to successful self-models that depict the issues as well as relationships between factors impacting research skill development and self-efficacy in online doctoral students? Findings from this study will provide information helpful for adjusting instructional and curricular approaches to enhance support for online students that are wary about taking research courses. Ideally, specific approaches will be determined to foster good practice opportunities and mastery experiences. To fulfill Walden University's mission of positive social change, it is essential that Walden's doctoral students are able to understand as well as conduct research.

Data Sources

Multiple data sources informed this pilot study and will inform the larger study. These data sources include:

Discussion analysis. A discussion analysis of asynchronous classroom discussions using the Critical Thinking Assessment Framework (TAF) developed by Weltzer-Ward, Baltes, and Lynn (2009) provided insight both into learners' applied understanding of the course material and into their ability to employ that understanding within a critical context. Discussion analysis was conducted independent of other analysis by a member of the research team

who was familiar with the other assessments and tools being utilized but was not familiar with the performance of the individual case-study learners on those assessments and tools. Analysis included discussion posts from weeks 3, 6, and 11 of the research methods course. These discussion were chosen to represent both a time and content cross-section of the course with week 3 asking learners to generate and revise research questions, week 6 asking learners to assess and revise proposed quantitative methodologies, and week 11 asking learners to create, assess, and revise either mixed methods or action research methodologies.

Assignment grades. Grades from weekly assignments were examined to see trends of change for the participant over the course. These are considered in relation to the discussion content.

RSES scores. The instrument is used to look at initial perceptions of research capabilities prior to the course as well as following course end. Items load into the following areas:

I. Conceptualization – 16 items
II. Implementation – 20 items
III. Early Tasks – 5 items
IV. Presenting Results – 8 items

Course Expectations Questionnaire. This is an open-ended questionnaire to gather qualitative, first-hand data on perceptions of skills prior to the course and expectations for the course. Some basic, relevant demographic data is collected in this questionnaire as well.

Course Experience Questionnaire. This is an open-ended questionnaire implemented after the course end to gather qualitative first-hand data on experiences that occurred during the course and the participants' perception of how this impacted their perceptions of their own research skills.

Instructor rubric. A rating was developed for instructors to assess the final capstone project for both conceptual understanding and alignment. This along with course grades can be used to consider actual success in the course in relation to perceptions of research capabilities.

FIRST RESULTS

A single case was examined in-depth in preparation for the larger grounded theory study. Four additional cases will be examined to continue this pilot in preparation for the grounded theory study. These four additional cases will further test the methodology and explore trends across different course sections, with different instructors and varying levels of initial confidence and incoming research preparation.

First Case Analysis

The first case to be analyzed in the pilot study is Penelope. The name Penelope is a pseudonym used in place of continual reference to a code number.

Participant background. Penelope is a 55 year old female student in the PhD in Education program that had no research as part of her bachelor's curriculum and had completed a Masters and EdS that both included theses but received no formal research instruction prior to the doctoral program. She was a student in the Fall 2008 doctoral course in research design.

Instructor/course context. Her course was taught by a very experienced instructor who had been employed by the university for several years and had taught the course several times. The course environment showed timely feedback. Feedback included both a score and written comments on each assignment. The course is a standard format that has been in place since 2003.

Discussion analysis. Across weeks 3, 6 and 11 the student showed regular interaction and good conceptual understanding. Penelope gave middle to high quality evidence throughout all discussions but often supported claims with only a single piece of evidence. The highest evidence per claim ratio was in week 11 with a score of 1.3.

Assignment grades. Penelope received the highest overall score in the course. Her total points for the course were 95/100. Scores on 5 points assignments ranged from 4.5 to 5. The lowest score came in week 8 for mis-applying an analysis technique to a qualitative study.

RSES scores. In comparing initial RSES scores with end of the course RSES scores, Penelope showed increases in several areas as well as decreases for several items. There were items that showed decreases within each of the three factors of the instrument but the majority of these decreases were in factor II: Implementation. For this factor 13 out of the 20 items showed decreases ranging between -1 and -10.

Course Expectations Questionnaire. Penelope reported an eagerness to learn and good confidence in her capabilities. She identified time as a potential obstacle in the course due to her full-time work.

Course Experience Questionnaire. Penelope reported that she learned a great deal but the course was much more challenging and time consuming then she had expected. She also reported that more feedback would have been helpful. She reported gaining much knowledge and confidence in qualitative research.

Instructor rubric. The final assignment is a research plan outline. The assignment was evaluated by the instructor for understanding of concepts and the alignment of concepts. Penelope rated a 5 for conceptual understanding and a 5 for alignment because all concepts were aligned perfectly into a well-planned study.

FINDINGS IN RELATION TO THE RESEARCH QUESTIONS

1. What aspects of the course experience contribute to the development of necessary research skills?

Based on analysis of interaction in the course environment as well as what the student reported, it would seem that training on basic research design as well as information on qualitative research within this course was good for the student's skill development. Also it seems like the student used the discussions well to demonstrate conceptual understanding and critical thought on key concepts and research planning.

2. What aspects of the course experience interfere with development of necessary research skills?

None based on the student's success in the course and her ability to develop a well-aligned study.

3. What aspects of the course experience contribute to a student's research self-efficacy?

It appears that the information in the course and text books for planning a qualitative study was helpful. The student reports confidence in planning such a study at course end.

4. What aspects of the course experience interfere with a student's research self-efficacy?

While the student was successful in the course, it seems that the high amount of work and rigor in the course combined with limited time available for working on assignments was somewhat of a stressor. Also, RSES indicate that experiences in the course caused the student to question her abilities in implementing a project. It seems like she may have learned more about what is involved in planning and implementing a study and that made her reassess her level for implementation. While she did decrease, her actual scores were all high, ranging from 90-100 of a scale from 1-100.

5. What role did personal factors play in this self-efficacy development (learning styles)?

The only personal factor might be the student's own expectations for her learning and her stressors related to time limitations.

SUMMARY

Examining this initial case confirmed that the elements of this study are useful for understanding multiple factors relevant to the development of research skill development and research self-efficacy for students in the first core research course. Interesting findings from this case include the student's stressors related to course requirements in combination with the high level of success the student showed in the course. It is also interesting that the student reported decreases in overall confidence in study implementation. This may indicate that the student now knows more about what is involved and is therefore, more conservative in her ratings. It is also interesting that while this is a general research design course that provides information on both qualitative and quantitative approaches, the student reports comfort and confidence in designing qualitative studies. These trends will continue to be explored across the four additional cases in preparation for the grounded theory study.

UPCOMING GROUNDED THEORY STUDY

This case study pilot study is helpful for understanding students' course experiences, refining procedures for the grounded theory study, and gaining experiences in working and relating the various data sources. These initial results are interpreted cautiously, informing mostly in the use of tools for data gathering for this population. The subsequent grounded theory study will be conducted in a truly inductive manner. Findings from the case study can point to areas for consideration but will not be used to theoretically ground the subsequent study because in grounded theory, findings must emerge from the data. A grounded theory study with at least 20 subjects is needed to properly address these research questions and develop a substantive theory that can inform online instructors, university administrators and inform additional research within the continuum of inquiry on this topic. The new university participant pool will easily facilitate the gathering of participants. In the interpretation of the grounded theory study, after findings have been processed and reported, findings will be considered in relation to initial case findings to see if trends have been confirmed.

AUTHOR INFORMATION

Beate Baltes earned her Ed.D.in Education from United States International University with a similar degree from the University of Munich, Germany. Before joining the Office of Faculty Development, Beate was a faculty member in the College of Education at Walden University. Before joining Walden University, she was an Associate Professor of Teacher Education for ten years, most notably involved in online teaching pedagogy. During her sabbatical, she spent a year at the University of Chemnitz in Germany, building a Department of Online Learning. Additionally, she volunteers at a German-American Language Saturday School as principal and teacher.

Laura Knight Lynn has a PhD in Research Methodology and Human Development from Loyola University Chicago. She is an Associate Director in the Center for Research Support at Walden University. Prior to that role, she served as faculty and Coordinator of Research and Residencies in the Richard W. Riley College of Education and Leadership at Walden University. Additionally, over the past 10 years she has served the Chicago non-profit community by consulting on community research and program evaluation projects.

Lisa Weltzer-Ward holds M.S. Electrical Engineering and M.A. Science Education from the University of Texas at Austin. She is a full-time faculty member in Kaplan University School of Information Science and Technology and is currently pursuing PhD Education Technology at Walden University. Prior to joining Kaplan University, she was a part-time faculty member in Walden University NTU School of Engineering and Applied Sciences. She has also worked in engineering with Motorola and with the University of Texas Microelectronics Research Center.

Peter Hoffman-Kipp holds an MA and Ph.D. from UCLA's Social Science and Comparative Education division of the School of Education. He is the Coordinator for Ph.D. Specializations in K-12 Leadership and Curriculum, Instruction, and Assessment for Walden University. Prior to that he taught in public university teacher education and public, charter, and parochial schools throughout the Los Angeles area. His research interests include teacher learning and reflection especially around issues of teacher identity, diversity, and the politics of education.

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