Graduate Students' Understanding of Educational Research in a Master of Education Program

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Abstract

Background: Graduate teacher education programs focus on developing professional teachers' pedagogical skills and professional knowledge, however they may also require a thesis. Completion of the thesis necessitates that graduate students have an understanding of educational research; this is often not well understood by teachers nor is it an inherent part of a teacher's work. Many graduate programs employ a step-by-step approach in developing an understanding of research beginning with reading and evaluating scholarly research, progressing to writing synopses of related research, then evaluating and understanding research methods employed, before finally producing original research.

Aims: The study describes the differences between professional teachers in a graduate education program at various points in the journey to becoming researching teachers. The intent was to examine differences in student understanding of educational research across courses.

Sample: Eighty-one adults with ages ranging from 21 to 57, enrolled in a master of education program in the western United States were surveyed at the beginning of three research-oriented courses.

Method: A questionnaire focused on the meaning of conducting educational research was completed by the students enrolled in the graduate program. In addition to frequency of response, open responses were coded and grouped according to themes and levels of understanding about educational research.

Results: Graduate student participants recognized the various sources of educational research and the need for research to be used for policy decisions. However, they retained misconceptions about the meaning of educational research and how it applied to their classroom practice. No significant correlations between age, educational assignment, and time in program were found.

Conclusion: The responses to the questionnaire illustrate the difficulty of changing long-held understandings of research by students in graduate education programs. The current strategies used are not addressing these misconceptions consistently and changes are necessary.

Keywords: Teacher education, Educational research, Master of education

一個教育碩士課程中研究生對教育研究的理解

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摘要

*背景：*培訓大學畢業老師的課程集中於發展老師的教學技能和專業知識，然而也有些課程還要求他們寫論文。論文的完成需要研究生有對教育研究的理解，但它不是老師工作的一個固有部分，故老師對教育研究經常瞭解不足。許多教育研究課程逐步從閱讀、理解和評估學術文獻開始，進而寫下對相關研究的概要，然後評估和瞭解使用的研究方法，在最後才 進行原創的研究。

*目的：*本研究描述受訓的老師在成為研究老師課程旅途中各點之間的區別，意向是審查在經歷課程路線中的學生對教育研究的理解上的區別。

*調查對象：*本研究在三條針對研究的路線上，勘測了八十一個年齡從21到57歲，在美國西部註冊入讀教育碩士課程的教師。

*調查方法：*註冊入讀教育碩士課程的學生完成了一份有關教育研究的問卷，除了計算不同反應之頻率外，并且根據關於瞭解教育研究的題材和水平，編組了學生在問卷中開放反應的編碼。

*調查結果：*參加的研究生辨認出各種來源的教育研究，和對於決策時使用研究的需要。然而，他們卻保存了對於教育研究意義和怎樣應用於他們在教室實踐中的誤解。年齡、教育任務和參與課程時間之間並沒有顯著相關。

*總結：*問卷的反應說明改變參與課程學生對研究長期持有的理解的困難。當前策略不能針對誤解，有必要去調整。

關鍵詞：教師培訓、教育研究、教育碩士課程

The purposes of graduate study in education vary across programs and locations. Often, graduate education programs focus on developing in-service teachers' professionalism and pedagogical skills, however they may also require a thesis or research project. The goals of individual students pursuing graduate degrees in education also vary, with some students seeking understanding of research methods while others focus more on advanced pedagogical knowledge. Graduate programs in education often offer multiple pathways for students to meet their goals through a wide range of options for graduate projects and theses. All of these projects require students to develop an understanding of educational research, whether they participate as a critical consumer or a creative producer of research. It is therefore essential that faculty are aware of student understanding of educational research to enable proactive guidance of students to a mature construct.

Transition to Teacher as Researcher

Graduate programs in education serve many purposes. For some, the program is a stepping stone to further academic pursuits. For others, it is an opportunity to learn more about the craft and art of teaching. Still others desire increased opportunities and remuneration associated with advanced study. Universities offering graduate programs may struggle with the tension between developing in-service teachers' pedagogical skills and their understanding of research. The goals of being an effective teacher frequently may conflict with the objective stance of a researcher. "The primary goal of research is to understand; the primary goal of teaching is to help students learn" (Wong, 1995a, p. 23). Therefore the teacher researcher is often faced with the quandary of whether to merely observe or to try to change student behavior (Wong, 1995a).

Some educational researchers have successfully resolved this tension. Wilson (1995) found that as a teacher researcher she was more apt to consider questions such as "What might it take to help students learn in meaningful ways?" and "Are my students learning?" (Wilson, 1995, p. 20). This stance of a teacher researcher is more progressive than traditional pedagogy and is more compatible with goals of educational research as a reflective practitioner (Reis-Jorge, 2005; Wong, 1995b).

In a graduate program, in-service teachers are, in fact, expected to learn a body of knowledge about meaningful inquiry and develop an understanding of criteria for quality research in order to be better consumers. Wilson (2006) acknowledged the need for educators to become critical consumers and gain research literacy. However, there is also a need to balance the depth and breadth, research and teaching, disciplinary knowledge and knowledge of education. Wilson asserts that a "well-educated professional is someone who appreciates, understands, consumes, and uses research that comes out of many disciplinary and interdisciplinary traditions" (Wilson, 2006, p. 316).

However important it is for the faculty in graduate programs to provide a broad perspective, Reis-Jorge (2007) reported that teachers who had conducted both an informal mini-research study using data collection methods likely to be used in their classroom practice (think alouds, observations, tally sheets) and a formal study with more traditional methods much preferred the informal, practical approach. While teachers were willing to conduct informal studies to understand their students and their own practice better, most did not see themselves conducting formal research beyond the requirements of the program. Instead of providing a broad

perspective, teachers may view formal, systematic research as impractical. Yates (2004) asserts that the value of a thesis can be obscured by the process. However, those who go on to academic positions have learned valuable skills. Those who do certainly can investigate valuable and practical research in the thesis form.

In working with teaching professionals, there are factors that smooth the transition from teacher to teacher-researcher, from "passive consumption to active production" (Bean, 1987, p. 87). Typically graduate students are adults with several years of professional experience upon which to draw as they learn new concepts. They also are dedicated to education as evidenced by their commitment to graduate study. On the other hand, these same focused professionals can encounter difficulties making the transition from a personal to an intellectual perspective and from concrete experiences to educational theories (Labaree, 2003). However, "good research and good teaching are both characterized by inquiry and reflection" (Wong, 1995b, p. 23).

Understanding of Educational Research

Reis-Jorge (2007) described development of an understanding of research through three modes: reading, formal tuition, and immersion. The reading mode was characterized by researching and reading literature. Formal tuition included formal instruction in research methods. The research methods focused on question generation, use of questions as a vehicle for exploration of methods as well as library search skills. The methods included observation, talk aloud and recall protocols, transcribing, coding, and analyzing talk. These skills were put to use by Reis-Jorge's participants in a small-scale research project involving designing, administering, and analyzing questionnaires, and developing and using observation schedules. Finally, the immersion mode was a culminating experience in which participants were required to submit a substantial report of a small-scale empirical study on a topic related to their specialist area.

From Reis-Jorge's (2007) study, it is evident that teachers must go through a learning process as they become first, critical consumers of research and then, creative producers of research. Sternberg (1999) stated that "even students who learn to be good consumers of research may never develop the skills they need to produce the work they are so ready and willing to criticize. A balance is needed" (Sternberg, 1999, p. 212). In this process, "Students can and should learn not only about the contents of research, but also about how to generate and evaluate research" (Sternberg, 1999, p. 212).

In an investigation of stakeholders, including college faculty and students, school teachers and administrators, and the value each placed on research skills, Ravid (1997) found that of 15 skills, the highest rated skills were the ability to use library resources, carry out action research, and critically analyze professional literature. The lowest rated skills included knowing how to compute and interpret intermediate or advanced statistics, being able to publish research findings, and being able to carry out a formal thesis study. Respondents indicated that students who were pursuing advanced degrees may need these skills, but the practicing teacher did not.

> *Faculty in graduate teacher education programs need to review and re-assess the contents of the research courses to ensure that they are not viewed as mere requirements to get a master's degree. Rather, these courses should provide*

> *students the opportunity to acquire skills that will enable them to be reflective practitioners, generators of knowledge, and systematic observers. (Ravid, 1997, p. 12)*

In an investigation of the understanding of research among 90 post-graduate pre-service teachers in England, Taylor (2007) found that students could be separated into three categories in terms of their understanding of research. First were receivers of information about research who perceived themselves as novices waiting to be taught by the expert teacher educators. These pre-service teachers felt it was important to be informed about research if it gave them "up-to-date knowledge about educational policy" (Taylor, 2007, p. 7) and if it related to their area of interest and an identified grade. The second group was those who viewed research as a collection of experiences about their own practice. The information received in training classrooms from the professors was more likely to be evaluated as to how it related to practical experience. One pre-service teacher stated.

> *It's (research) but it needs to be analysed [sic]…it may not be directly applicable to your classroom...so what you are doing on a day to day basis in the classroom is sometimes more informative. (Taylor, 2007, p. 9)*

The final group was the "critical engagers", those who viewed "knowledge as constructed and contestable, subject to modification and change through purposeful practitioner enquiry, in order to raise questions, examine assumptions and suggest alternatives" (p.10). The iterative relationship between research and practice was understood and valued by these pre-service teachers.

The transition from teacher to teacher researcher can be difficult given the discrepant nature of the skills required by each role. Taylor's (2007) findings suggest that teachers will remain focused on the application of research to their practice; however, as Reis-Jorge (2007) articulated the goal of graduate programs is to guide teachers to the role of creative producers of research.

The purpose of the current study was to investigate graduate students' understanding of educational research. Of interest in this paper are the understandings and misunderstandings about educational research and how successfully the research courses within the graduate program advance students through Reis-Jorge's (2007) progression of reading, formal tuition, and immersion.

Method

A cross-sectional survey design was used to investigate differences in teachers' understanding of educational research in the first class session of three sequential educational research courses in a master of education program. Responses to a questionnaire were used in both qualitative and quantitative analysis.

Participants

The participants were 81 students pursuing a master of education degree (M.Ed.) from a public university in the western United States. Of the participants, 58 were female and 23 were male with ages ranging from 21 to 57 years (M=35.48, SD= 10.12). Three of the participants were pre-service teachers while 55 were current K-12 teachers (26 in K-6, 29 in 7-12), 13 were instructors at the university, and 9 had

other employment outside of public teaching. The variation of participants is typical for the program and illustrates the heterogeneous nature of enrolled students. The focus of the research was a comparison of students enrolled in three courses, with 35, 34, and 24 students in each course, respectively. Participants were unique within each course, with the exception of two students who had permission to take two courses concurrently; their data were excluded from the analysis. The sample sizes allow for some quantitative analysis, although without much statistical power.

Instrument

The Understandings of Educational Research questionnaire (see Appendix) was adapted from Taylor's (2007) *Becoming a Researching Professional* questionnaire. Adaptations included changes in wording to make it applicable to the current university setting and to align with educational organization in the United States. No additional validity or reliability evidence was collected for the instrument in this study. The instrument was used based on face value. The questionnaire elicited responses using closed- and open-ended questions concerning educational research.

Procedure

The graduate education program has a four course, nine semester credit research strand. Each course is prerequisite to the next. The sequential nature of the courses can be viewed as levels of exposure, with those in the first course having the least exposure to educational research and those in the final course having the most. The courses consist of

- *C1: Fundamentals of Graduate Study (MED 6000, 2 credits). The focus of the course is to develop critical consumers of educational research through reading, critiquing, and writing. Reading (Reis-Jorge, 2007)*
- *C2: Conducting Educational Research (MED 6080, 3 credits). The focus of course is to develop an understanding of the methods of educational research. Formal Tuition (Reis-Jorge, 2007)*
- *C3: Developing a Project Proposal (MED 6085, 1 credit). The main objective for this course is to develop a proposal for a project addressing a significant educational question that has usefulness and applicability. Formal Tuition (Reis-Jorge, 2007)*
- *C4: Masters Project (MED 6090, 3 credits). The student, under direction of the project committee chair, completes the project and writes up the results and discussion. Immersion (Reis-Jorge, 2007)*

The questionnaire was administered during the first class session of the semester in each of the first three courses (C1, C2, and C3). Researchers did not have access to students enrolled in C4, and those students were not included in this study. For each question the frequency of response was calculated and open responses were coded and grouped according to themes and levels of understanding about educational research. The closed-ended responses provided comparison on issues related to the value of research. Open-ended questions were coded by the primary author using Taylor's (2007) categories of novice, practical experience, and critical engagers. The secondary author then used the codes to rate each response. Novice ideas included those that described research, but did not attribute outcomes to any changes in practice or as a means of developing deeper understanding of concepts. The following is an example of a novice explanation.

> I don't know but I would assume the method for conducting research would be the same or similar to other research.

Most respondents expressed the meaning of research as a process or use, a more advanced conception than described above, but still not focused on knowledge production. Examples of practical explanations include the following:

> To form a hypothesis statement or question - put the hypothesis to a group and track the data - have the study repeated with similar results - put through peer reviews and published.
>
> To investigate using careful methodology and controls what creates the best probability for learning in students.

The most advanced meaning of research, knowledge production, was expressed by approximately 25% of respondents, regardless of course.

> You try a new teaching method to see if it is more effective. Ideally you can have a control group and an experimental group and you are able to control the variables. Sometimes it is a little less formal but you are still looking to see if you can get improved results.
>
> It is a process which defines the standard of professional growth in any department or line of employment. It is systematic and detailed accumulation of information and opinions concerning questions regarding topics that will enhance processes or create new processes of thought and procedure.

Using the coded responses, a level of understanding was assigned to each participant.

Results

The questionnaire asked participants about the meaning of educational research including who conducts educational research, and for whom the results have use and value. The results are organized from general outcomes (i.e. use and value for research) to primary outcome (meaning of research).

The questions represented in Table 1 regarding users, value, and sources of research show few differences in the responses across courses. The variations in responses were not analyzed beyond the comparison. The students, regardless of course, indicated that university faculty are the users of educational research more frequently than other practitioners. Academic journals were the most frequently cited source of research.

To gain insight into students' understanding of research, questions were asked about previous research conducted, the impact of research on practice, and the meaning of research (Table 2).When asked if they had ever conducted educational research, approximately one quarter of the respondents described their research as finding articles for the purpose of writing a paper (Table 2, Previously Conducted Research). If participants provided multiple examples of the previously conducted research, all examples were coded and are included. Further, when asked to describe what it means to conduct educational research, approximately 75% of students did not understand that research was a means of producing knowledge (Table 2, Meaning of Research). The percent of students with these

two misconceptions was similar across the courses, implying that the courses, as currently taught, do not address this aspect of research thoroughly enough. Students had failed to replace their understanding of research as a search for information with the understanding of research as the production of new knowledge through active experimentation.

Some important differences were seen across students enrolled in each of the three courses. For students who had conducted some research at C3, their understanding of educational research showed a recognition that such work resulted in a production of knowledge. It is interesting to note that a higher percentage of students enrolled in C3 indicated conducting action research or work-related research than the other two courses. However, a greater percent, when compared to the other courses, also indicated no previous research. The latter finding may suggest that students are more aware of the complexity of research and have discounted novice attempts or library research.

When asked if research had an impact on their practice, more than 40% of students in each course described a specific change to their practice (see Table 2). The greatest difference across courses is found in those students enrolled in C3 who indicated that research impacts policies within their schools and classrooms. This is likely due to the emphasis on scientifically-researched-based practices as required by the *No Child Left Behind Act* in the United States (PL 107-110).

The most important outcome variable in this study was the participants' understanding of the meaning of education research. Taylor's (2007) categories of novice, practical experience, and critical engagers were used as a guide to evaluate the respondents' explanations of the meaning of educational research. The responses from the current study regarding the meaning of educational research indicated groups of students who had (a) a novice understanding, (b) an understanding focusing on practice or use, and (c) a view of research as a way to produce new knowledge. Open responses were coded according to Taylor's descriptions of each level. The results indicate there was little difference by course (see Table 2). A one-way analysis of variance (ANOVA) found no significant difference in level of understanding across courses ($F=0.22$, $p=0.81$).

Fewer than 15% of respondents in any course expressed novice ideas about research. To analyze the differences in responses, Pearson product-moment correlation coefficients were calculated between level of research understanding, gender, age, assignment in education, and course membership. Assignment in education was coded with 0=pre-service teacher, 1=in-service teacher, 2=adjunct instruction, 3=administrator. No statistically significant correlations were found between understanding of research and the other variables (Table 3). None was expected for age and gender, however it was expected that assignment and course membership may have some relationship. The lack of a significant correlation indicates a weak relationship between these variables and the understanding of educational research.

Discussion

The results reveal startling misconceptions about educational research. They illustrate the difficulty of changing long-held understandings through education, an area which has been well studied by cognitive theorists (Chinn & Brewer, 1993; Shuell, 1996). When asked if they had previously conducted educational research, many participants included conducting a literature review even when they also provided more accurate examples of conducting

educational research. Participants including accurate as well as inaccurate examples of educational research is evidence of persistent misconceptions. To address the persistent misconceptions about the meaning and uses of research, graduate faculty need to involve students in informal action research projects at many points in their graduate study as suggested by Ravid (1997). The formal research required in the last research class of the program (C4) for which the previous courses prepare students, may not be adequate for personalizing research as a task applicable to classroom practice; however, an exit questionnaire would be needed to determine if this is the case. When professional teachers see the value and applicability of research for their classroom practice, it may have a greater impact on their understanding of research. Graduate faculty also need to make the instruction in research methodology more concrete and relevant to the students' setting so knowledge can be applied in meaningful ways.

The study was limited by the general nature of the questionnaire. No questions addressed specific questions about the role of the participant in any previously conducted research. Additionally, a larger sample would aid in greater clarity of the findings. Further investigations comparing experienced in-service teachers with pre-service teachers would be valuable along with research to more clearly elicit specific information about the understanding of research as knowledge consumption versus knowledge production.

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Table 1

Users, Value, and Source of Research

	C1 N=35		C2 N=34		C3 N=24	
	n	%	n	%	n	%
Users of Research						
University Faculty	35	100.0	33	97.1	23	95.8
District Staff	29	82.9	26	76.5	21	87.5
State Agency Staff	33	94.3	28	82.4	21	87.5
US Department of Education	32	91.4	29	85.3	21	87.5
Value for Research						
Myself (student)	35	100.0	32	94.1	23	95.8
All Educators	35	100.0	32	94.1	23	95.8
School Administrators	34	97.1	31	91.2	22	91.7
District Administrators	34	97.1	31	91.2	22	91.7
Policy Makers	35	100.0	31	91.2	23	95.8
University Faculty	34	97.1	32	94.1	23	95.8
Lawmakers	34	97.1	31	91.2	22	91.7
General Public	33	94.3	30	88.2	22	91.7
Source of Research						
Academic Journals	25	71.4	30	88.2	20	83.3
Practitioners Journals	14	40.0	21	61.8	13	54.2
Books	21	60.0	29	85.3	18	75.0
Government Publications	16	45.7	19	55.9	14	58.3
University Courses	24	68.6	27	79.4	20	83.3
Professional Development	22	62.9	23	67.6	19	79.2
Peers	26	74.3	23	67.6	15	62.5

Table 2

Research Experience, Impact, and Understanding of Research of Graduate Students

	C1 N=35		C2 N=34		C3 N=24	
	n	%	n	%	n	%
Previously Conducted Research*						
Novice	3	8.6	3	8.8	1	4.2
Literature Review	8	22.9	7	20.6	6	25.0
Project for Class	5	14.3	6	17.6	5	20.8
Action Research/Work Related	6	17.1	11	32.4	9	37.5
No Previous Experience	22	62.9	18	52.9	16	66.7
Research Impacts Practice						
Should/Could Impact	12	34.3	7	20.6	1	4.2
Impacts Policies	4	11.4	9	26.5	8	33.3
Impacts Classroom Practice	17	48.6	14	41.2	11	45.8
No response	2	5.7	4	11.7	4	16.7
Meaning of Research						
Novice	3	8.6	5	14.7	2	8.3
Practical Experience	22	62.9	16	47.1	15	62.5
Critical Engagers	9	25.7	9	26.5	6	25.0
No response	1	2.9	4	11.8	1	4.2

*Multiple comments per participant could be included.

Table 3

Correlation of Gender, Age, Assignment, and Course Membership by Level of Understanding of Educational Research

	Gender	Age	Assignment	Course membership
Level of Understanding of Educational Research	-0.08	0.00	.01	-0.06

N=77

Appendix: Understandings of Educational Research Questionnaire

1. Have you had any experience conducting research?
   Yes No
   If yes, describe

2. What does it mean to conduct educational research?

3. Who conducts educational research? (mark all that apply)
   ____ University faculty
   ____ School district administrators
   ____ State Office of Education employees
   ____ U.S. Department of Education employees
   ____ Other (specify) _____

4. For whom is educational research valuable? (mark all that apply)
   ____ Me
   ____ All educators
   ____ School administrators
   ____ District administrators
   ____ Education policymakers (State Office and U.S. Department of Ed.)
   ____ University faculty
   ____ Lawmakers
   ____ General public
   ____ Other (specify) _____
   Explain your responses:

5. Do you think educational research impacts your work as a professional teacher?
   Yes No
   Please comment on your answer:

6. Have you changed your educational practice based on the results of educational research?
   Yes No
   If yes, please describe:

7. How do you learn about the results of educational research? (mark all that apply)
   ____ Academic journals
   ____ Practitioner journals
   ____ Books
   ____ Government publications
   ____ University courses
   ____ Professional development
   ____ Peers
   ____ Other (specify) _____

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