

Original Paper

Educating Doctoral Students in Kinesiology to Teach Effectively

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Abstract

Doctoral program graduates, including in kinesiology, may be inadequately prepared to become effective teachers. The purpose of this study was to examine the required courses in research and teaching for kinesiology doctoral students and the related skills and abilities most important for doctoral students to develop to be successful in their first faculty positions. Through a survey, faculty coordinators of graduate programs in kinesiology were asked to identify required courses, the relative importance of skills and abilities in research and teaching, and the preparation levels of doctoral program graduates in research and teaching. Respondents rated courses, skills, abilities, and preparation in research consistently higher than courses associated with teaching. The authors proposed recommendations for preparing a more qualified cadre of kinesiology doctoral program graduates.

Keywords

doctoral students, research and teaching preparation, effective teaching, kinesiology

1. Introduction

The Ph.D. is a research-focused degree, with its historical emphasis on developing students' abilities to discover and contribute to the creation of new knowledge. Following years of dedicated study and research as doctoral students, graduates often desire careers in similar, research-intensive universities. Most doctoral graduates, however, are much more likely to obtain faculty positions in comprehensive universities, liberal arts institutions, and two-year colleges in which the primary mission is teaching.

Barney (2019), Bergner, Lin, and Tepalagui (2015), Bok (2013), and Brightman (2009) argue that doctoral faculty emphasizing research and the reality of college teaching becoming doctoral program graduates' central job responsibility perpetuate a disconnect between expectations and what faculty will do throughout their careers. Marx, Garcia, Butterfield, Kappen, and Baldwin (2016) even accuses doctoral programs in business of "malpractice" (p. 501) for perpetuating the practice of emphasizing research while ignoring instructional preparation.

Doctoral faculty in most institutions typically expect doctoral students to learn disciplinary content and develop research and scholarly abilities to the exclusion of developing and practicing instructional design and delivery skills. For example, in a comprehensive assessment of the preparation of doctoral program graduates in business, Bonner, Stone, Mittal, Phillips, and Utecht (2020) argue that doctoral students need "to develop competencies to become effective teachers" (p. 338). Rousseau (2016) agrees, "...doctoral students will benefit from a structured and supportive environment in which to learn and practice effective approaches to teaching" (p. 525).

In addition to a prioritization of research in doctoral programs, some doctoral students may doubt their abilities to become successful researchers and teachers, question their decisions to pursue a doctoral degree, or lack self-efficacy (i.e., a belief in personal capabilities to achieve or perform) (Foot, Crowe, Tollafeld, & Allen, 2014). This may contribute to only about 50% of doctoral students across all disciplines completing their degrees (Gardner, 2009). Possibly to address this significant drop-out of students, doctoral faculty may need to re-conceptualize their doctoral programs through increased socialization and personalized mentoring, improved preparation to teach, and expanded emphasis on the effectiveness of graduate students' ability to teach.

1.1 Socialization and Mentoring

Socialization, which is behaving and mixing in socially acceptable ways, can counteract a lack of self-efficacy and negative perceptions and contribute to positive experiences for students who successfully transition from prior academic studies, full-time employment, or other life circumstances. Austin (2002) offers four recommendations for how doctoral programs could increase completion rates through a socialization process: providing opportunities for students to think more deeply about teaching; supporting them with mentoring, advising, and periodic feedback; facilitating peer relationships and peer mentoring; and encouraging doctoral students to engage in self-reflection to enhance their growth.

Boyce, Napper-Owen, Lund, and Almarode (2019) advocate that faculty mentoring and positive advising relationships increase academic and social integration of doctoral students. Faculty mentoring and advising are especially important since many new doctoral students in the sub-fields of kinesiology report they lack a comprehensive understanding of program requirements, time to degree completion, and responsibilities of becoming a faculty member. In describing earning doctoral degrees specific to kinesiology doctoral programs, Lee and Curtner-Smith (2011), Richards, Sinelnikov, and Starck (2018), Russell, Gaudreault, and Richards (2016), and Ward (2016) underscore the value of socialization of

students for doctoral studies.

Socialization helps students conceptualize and prepare for potential academic careers and associated faculty roles. Ideally, doctoral students will receive regular and substantive mentoring, advising, and feedback, opportunities for peer interactions, diverse and developmentally oriented teaching opportunities, guidance about faculty responsibilities, and encouragement for guided reflection (Austin, 2002). Writing reflective personal journals, keeping activity logs, and participating in ongoing dialogues with peers and faculty mentors can help doctoral students navigate challenging transitions into and through new learning environments (Brightman, 2009; Foot et al., 2014).

1.2 Inadequate Preparation to Teach

Boyce, Lund, Napper-Owen, and Almarode (2019) report that doctoral students in kinesiology feel prepared to teach, perceive they can create inclusive classroom environments, and believe they can articulate a teaching philosophy. These doctoral students' perceptions appear to contradict other research that suggests doctoral student preparation on how to teach effectively is lacking (Bergner et al., 2015; Brightman, 2009; Brightman & Nargundkar, 2013; Marx et al., 2016).

Inadequate preparation for teaching responsibilities is not unique in the sub-fields in kinesiology. When asked about their level of preparedness, graduate students in sociology identified several challenges they encounter—lack of confidence in feeling qualified to teach including insecurity about their teaching skills; time required to respond to emails, complete grading of tests and assignments, and create course materials; inability to deal with student issues and problems, such as when students challenge grades, claim illegitimate excused absences, cheat on tests, and plagiarize assignments; and lack of support from faculty mentors (Smollin & Arluke, 2014). Dunn, Hooks, and Kohlbeck (2016) report that 60% of former doctoral students in accounting receive no pedagogical training in their doctoral programs. Based on their investigation of the teaching preparation of graduate students in economics, Walstad and Becker (2003) report a major gap between teaching demands on these students and their teaching preparation with about 40% receiving no training prior to teaching their own courses.

Sometimes doctoral students get “mixed messages” (p. 104) when faculty expect quality teaching, yet advise doctoral students to spend less time on teaching and more time engaged in research (Austin, 2002). When examining STEM disciplines with long hours dedicated to research in labs, Stowell, Churchill, Hund, Kelsey, Redmond, Seiter, and Barger (2017) identify that research commitments serve as a barrier to increasing the amount of time doctoral students could spend studying about and practicing effective teaching.

Doctoral curricula offer expansive disciplinary content, yet many programs do not require dedicated courses, seminars, or other learning experiences about how to teach. Graduate faculty may devote insufficient time to mentoring their students in instructional design and delivery skills. Teacher training in doctoral programs, suggest Brightman and Nargundkar (2013), may not exist because of faculty's traditional opinions—believing teaching strategies are discipline-specific, improving teaching is unnecessary, perceiving that “good teachers are born, not made” (p. 299), and devaluing the importance

of effective teaching, while overvaluing research. Brightman (2009) and Marx et al. (2016) argue the lack of a faculty champion to develop and implement a teaching course or program is the reason doctoral programs in business schools do not offer significant pedagogical preparation in teaching.

1.3 Quality of Instruction

Quality of instruction is central to undergraduate student retention and graduation from college. When graduate students teach economics courses and this instruction is not done well, it “can hurt a department by increasing student complaints, decreasing majors, and negatively affecting the employment potential of graduate students” (Walstad & Becker, 2003, p. 451). When taught by effective teachers—faculty and graduate students—with pedagogical knowledge and pedagogical content knowledge, undergraduate students learn more and develop essential life skills prior to graduation (Gyurko, MacCormack, Bless, & Jodl, 2016). Stowell et al. (2017) advocate that when doctoral program graduates in STEM disciplines learn best practices in teaching and learning, they are more likely to become better faculty and educators, can communicate information more effectively, become better scientists, and are more competitive for academic positions. Stowell et al. (2017) also claim, “...putting highly trained graduate student instructors into the classroom to implement these practices will increase the quality of undergraduate education” (p. 318).

Barney (2019) identifies three ways the teaching abilities of doctoral students can improve: 1) having a teaching mentor who helps them improve their teaching skills; 2) conducting several direct observations of excellent teachers in action; and 3) participating in at least one teaching workshop each semester. Similar to Barney’s (2019) description of the absence of teaching business management students how to teach, Lund, Napper-Owen, and Boyce (2019) agree about the lack of preparation of doctoral students in kinesiology. Brightman and Nargundkar (2013) suggest requiring all doctoral students to study pedagogical literature, learn about classroom management, student motivation, course organization, active learning strategies, assessment and grading, technology, and student evaluation, complete peer and faculty teaching observations, and develop a teaching philosophy. Bonner et al. (2020) recommends that doctoral students need to develop competence in their content, instructional design, courses administrative skills, and instruction delivery. We agree with Brightman and Nargundkar (2013) and Bonner et al. (2020)—doctoral students can and should be better prepared to teach.

1.4 Purpose and Research Questions

More information is needed about if and how PhD students are prepared to teach. The purpose of this investigation is to examine the status of teaching preparation of doctoral students in the United States in one broad discipline—kinesiology. We sought to answer these four research questions:

- a) What are the required courses in research and teaching for kinesiology doctoral students?
- b) What skills and abilities are most important for doctoral students to develop to be successful in their first faculty positions?
- c) Do program coordinators feel doctoral program graduates are well prepared in research skills and teaching skills for a variety of faculty positions?

- d) What resources do programs provide students who teach during their graduate programs?

2. Method

This study used survey methodology to explore the research questions. Cross-sectional survey methodology using a questionnaire was an appropriate method for this research because it allows the researcher to explore relationships between variables and collect descriptive data when variables cannot be manipulated (Gratton & Jones, 2014). Additionally, a questionnaire is ideal when the data that need to be collected are relatively simple and researchers are looking to describe what is (Gratton & Jones, 2014). Participants were recruited from faculty coordinators in graduate programs in kinesiology. The website of the National Academy of Kinesiology (NAK) provides an inclusive list of 38 doctoral programs, with 89 doctoral program areas that focus on the study of physical activity. The names and email addresses of faculty coordinators for each of the NAK doctoral program areas were collected from institutional websites and entered into a database. While not all doctoral programs are members of NAK, the membership includes programs that clearly identified themselves as fitting within the field of kinesiology. After receiving approval from the institutional review board at the first author's institution, a 13-item questionnaire (available from the authors upon request) was sent to each faculty coordinator. Because some coordinators oversaw multiple programs, a total of 84 email messages were sent. A reminder email was sent one week after the initial email, and a second reminder was sent another week later. Seventeen individuals responded yielding a 20% response rate. Because the survey was anonymous, and the population was small, we did not request demographic information or university names from faculty coordinators.

The questionnaire was created specifically for this study. While it is generally better to use existing scales to collect data (Gratton & Jones, 2014), a review of the literature did not result in existing scales or questions to answer the research questions. Thus, to enhance validity of the survey, a subset of six program coordinators was randomly chosen from the database and asked to participate in semi-structured interviews to help create questions and answer responses. Asking your population to participate in survey creation and review your survey prior to data collection is a way to improve face validity (Gratton & Jones, 2014). One coordinator agreed to participate. Follow-up emails did not yield additional willing participants. The low response rate precipitated the need to review program websites for doctoral programs to aid question and response option creation and improve face validity. These sources of information were used to design the questionnaire to help ensure the questions being asked measured what was intended. The first author, who has 46 of years of teaching experience in higher education, did a final review of the survey prior to sending it out, as a way to improve content validity through expert review (Gratton & Jones, 2014).

The Qualtrics questionnaire included questions about required doctoral courses (e.g., experimental design, grant writing, research methods, statistics, college teaching, teaching effectiveness, and teaching practicum), development of research-related and teaching-related skills and abilities of

doctoral students, and how doctoral programs prepared graduates for their careers. Likert-type questions were used to investigate the perspectives of coordinators in relation to the preparedness of their students and importance of different skills and abilities to their success. Likert-type questions are effective for assessing attitudes, opinions, and beliefs because they allow respondents to indicate the response to which they agree or disagree with a statement (Gratton & Jones, 2014). Because the population from which to draw the sample was small, sending the survey out for a pilot to test reliability was unrealistic.

Data were downloaded from Qualtrics into SPSS Version 24 for analysis. Descriptive statistics were run. The McNemar test for differences in proportions was used to examine differences in percentages for required courses because the same participants were evaluating the courses and thus responses were likely to be related. This test is similar to the chi-square test, except it does not require data to be independent, and it is a non-parametric test (Adedokun & Burgess, 2012). Since the same participants answered questions on the importance and achievement of skills and abilities, paired t-tests were run to compare the means of the skills and preparedness of student outcomes to determine if means on these dependent variables differed significantly from each other. Due to the small sample sizes, confidence intervals were large; however, the sizeable discrepancies between preparation in teaching and research are still meaningful and significant, even at the closest ends of the confidence intervals. To protect against drawing inaccurate conclusions because of small sample size, we chose to use a p value of .01, instead of .05, to reduce Type I error.

3. Result

All 17 (100%) graduate coordinators who responded reported their programs prepared graduates for faculty positions in higher education, although one (5.9%) added its graduates also were prepared to work in schools for children and adolescents. A total of 13 (76.5%) respondents indicated their doctoral students took the same courses regardless of the type of institution (i.e., a teaching or research focus) in which they planned to seek faculty positions.

3.1 RQ1: What Are the Required Courses in Research and Teaching for Kinesiology Doctoral Students?

Research methods (15; 88.2%) and statistics (14; 82.4%) were the two types of courses most frequently required for every doctoral student. Experimental design (8; 47.1%), grant writing (4; 23.5%), teaching practicum or experience (4; 23.5%), college teaching (3; 17.6%), and teaching effectiveness (3; 17.6%) were required. McNemar's test was run for each pairing of courses to determine if there were statistical differences in percentages. Differences between college teaching, teaching effectiveness, and teaching practicum and research methods and statistics as required courses were significant at the $p < .01$ level. Differences between grant writing and research methods and statistics were also significant at the $p < .01$ level. Table 1 provides greater specificity about the required courses including types of courses and number of credit hours for each.

Table 1. Number of Required Credit Hours for Selected Courses taken by Doctoral Students

	No Required Credit Hours	Less than 3 Credit Hours	3 Credit Hours	More than 3 Credit Hours
College Teaching	52.9% (9)	11.8% (2)	5.9% (1)	0% (0)
Experimental Design	35.3% (6)	35.3% (6)	11.8% (2)	0% (0)
Grant Writing	47.1% (8)	0% (0)	23.5% (4)	0% (0)
Research Methods	0% (0)	0% (0)	47.1% (8)	29.4% (5)
Statistics	5.9% (1)	0% (0)	11.8% (2)	70.6% (12)
Teaching Effectiveness	35.3% (6)	5.9% (1)	11.8% (2)	0% (0)
Teaching Practicum or Experience	41.2% (7)	5.9% (1)	11.8% (2)	0% (0)

3.2 RQ2: What Skills and Abilities Are Most Important for Doctoral Students to Develop to Be Successful in their First Faculty Positions?

Graduate program coordinators rated the importance of skills and abilities needed for doctoral graduates to be successful in their first faculty positions. Paired t-tests were run to determine differences in means on variables in the same sample, comparing each skill and ability to one another. As shown in Table 2, there were multiple significant differences, most notably when comparing both attaining advanced disciplinary knowledge and collaborating on an independent research project with other skills and abilities.

Table 2. Importance of Skills and Abilities Needed for Success in First Faculty Position

Skills and Abilities	<i>M (SD)</i>	<i>MDiff</i>	<i>t</i>	<i>df</i>	<i>p</i>
Attain advanced disciplinary knowledge	4.88 (.34)				
Gain experience teaching college courses in the discipline		0.57	2.76	15	.01
Plan and develop courses		0.69	3.47	15	.003
Facilitate active student learning activities		0.69	3.15	15	.007
Conduct high-level statistical analyses		1.25	5.00	15	< .001
Design and implement independent research	4.88 (.34)				

Gain experience teaching college courses in the discipline		0.57	2.76	15	.01
Plan and develop courses		0.69	3.47	15	.003
Facilitate active student learning		0.69	3.15	15	.007
Conduct high-level statistical analyses		1.25	5.00	15	< .001
Collaborate on research projects	4.63 (.50)				
Conduct high-level statistical analyses		1.00	4.47	15	< .001
Facilitate active student learning		0.44	2.41	15	.03
Plan and develop courses		0.44	2.78	15	.01
Conduct basic statistical analyses	4.56 (.63)				
Write and submit grants	4.38 (.89)				
Gain experience teaching college courses in the discipline	4.31 (.70)				
Plan and develop courses	4.19 (.75)				
Facilitate active student learning activities	4.19 (.75)				
Conduct high-level statistical analyses	3.63 (1.03)				
Conduct basic statistical analyses		-0.93	3.76	15	.002
Write and submit grants		-0.75	3.87	15	.002
Gain experience teaching college courses in the discipline		-0.69	2.42	15	.03
Plan and develop courses		-0.56	2.52	15	.02
Facilitate active student learning activities		-0.56	2.33	15	.03

3.3 RQ3: Do Program Coordinators Feel Doctoral Program Graduates Are Well Prepared in Research Skills and in Teaching Skills for a Variety of Faculty Positions?

Graduate program coordinators indicated on a five-point Likert-type scale of 1 strongly disagree to 5 strongly agree that doctoral students were well prepared to design and implement research projects after graduation ($M = 4.25$, $SD = 1.342$), design and deliver undergraduate courses in the discipline

after graduation ($M = 4.00$, $SD = 0.730$), and facilitate active student learning activities in undergraduate courses in the discipline after graduation ($M = 3.38$, $SD = 0.806$). Paired t-tests indicated there was a significant difference in their confidence that graduates could design and deliver undergraduate courses and facilitate active student learning activities in undergraduate courses ($t(15) = 3.10$, $p = .007$).

3.4 RQ4: What Resources Do Programs Provide Students Who Teach during Their Graduate Programs?

Table 3 lists the instructional resources provided and evaluation methods used when programs assigned doctoral students to teach undergraduate courses in the discipline. Sample syllabi were the most common teaching resource provided to graduate student teachers, and over half of the institutions responding formally evaluated graduate students' teaching.

Table 3. Resources Provided to and Required Evaluation of Graduate Student Instructors

Resources and Evaluation Methods	% (#)
Sample syllabus	82.4% (14)
Reference librarian assistance	58.8% (10)
Formal written evaluation by mentor or supervisor	58.8% (10)
Required attendance at a one-day graduate student teaching workshop	47.1% (8)
Optional attendance at teaching excellence center instructional sessions	47.1% (8)
Instructional aids provided by the textbook publisher	47.1% (8)
Periodic mentoring meetings including some discussion about teaching	47.1% (8)
Casual observation by mentor or another a faculty member	29.4% (5)
Faculty mentor	23.5% (4)
Required attendance at teaching excellence center instructional sessions	11.8% (2)
Only if student evaluations indicated a problem in doctoral students' teaching	11.8% (2)
Student feedback	5.9% (1)
Required a graduate teaching certification or teaching portfolio	5.9% (1)

4. Discussion

The purpose of this investigation was to examine the status of teaching preparation of doctoral students in kinesiology programs in the United States. Doctoral programs identified by the NAK prepare graduates for faculty positions with similar types of courses required for all doctoral students. The first research question asks, “What are the required courses in research and teaching for kinesiology doctoral students?” As expected, this study found that research methods and statistics, in support of the research emphasis of Ph.D. programs, were the most frequently required, with courses associated with developing teaching skills required significantly less often. Research methods and statistics are foundational courses for all students, with experimental design and grant writing courses required by fewer programs. Courses associated with teaching usually are not required, which supports the conclusions of Austin (2002) and Golde and Dore (2001).

The second research question asks, “What skills and abilities are most important for doctoral students to develop to be successful in their first faculty positions?” Faculty program coordinators believe that developing and expanding research skills from collaborating on projects to becoming an independent researcher far surpassed in importance all of the teaching-enhancement learning experiences. Doctoral programs emphasize attaining advanced disciplinary knowledge, conducting independent and collaborative research projects and statistical analyses, and learning grant writing.

Graduate faculty coordinators confirm their students are better prepared to design and implement research projects after graduation than design and deliver undergraduate courses. This supports how Austin (2002) and Golde and Dore (2001) describe most doctoral programs nationally. Since research-related activities eclipse teaching development and experience, are doctoral faculty preparing their graduates more effectively for research-focused rather than for teaching-focused institutions? There are only 38 doctoral institutions in the NAK compared with over 2400 4-year, degree-granting institutions in the United States with most of these institutions offering at least a bachelor’s degree in a discipline related to kinesiology. Therefore, it seems preparing doctoral students to teach effectively is a worthwhile, and even essential, undertaking.

The third research question asks, “Do program coordinators feel doctoral program graduates are well prepared in research skills and in teaching skills for a variety of faculty positions?” Faculty coordinators report their doctoral students possess solid research skills, yet they are much less prepared to design and deliver and facilitate active student learning in undergraduate courses. Study findings support Bok (2013), Grasgreen (2010), and Robinson and Hope (2013) who suggest the importance of preparing the future professoriate for their primary responsibility of teaching. Something other than “here is a copy of the syllabus and good luck” seems essential. These findings also are similar to the perceptions of doctoral students from a variety of disciplines in a study by Heflinger and Doykos (2016). They report that about one-third of students feel unprepared to teach, while about 90% feel prepared for writing and presenting their scholarly work.

The fourth research question asks, “What resources do programs provide students who teach during their graduate programs?” While some institutions provide mentoring or evaluating of teaching of doctoral students, the most common resource given these students when assigned to teach a course is a sample syllabus. While research skills and abilities are essential for discovering and expanding knowledge in the discipline (Golde & Dore, 2001; Russell et al., 2016), developing the teaching skills and abilities of doctoral graduates ought not to be overlooked (Bergner et al., 2015; Gyurko et al., 2016; Stowell et al., 2017). Given the popularity of kinesiology undergraduate programs in which most graduates of NAK-member institutions will teach, improved preparation of doctoral students in instructional courses and experiences seems extremely important (Richards et al., 2018; Robinson & Hope, 2013).

Although students may perceive they are prepared to teach (Boyce, Lund et al., 2019), there is a significant difference between teaching and effective teaching, and our current study suggests formal teacher preparation is lacking. Building on the importance of learning to teach effectively, doctoral programs owe their students greater preparation, especially since most graduates will obtain faculty positions at teaching-focused institutions.

Brightman (2009) describes two programs he considers exemplars for teacher training for doctoral students, and we endorse both of these. The George W. Woodruff School of Mechanical Engineering at Georgia Tech University began its doctoral seminar on teaching in 1990 (see <http://www.me.gatech.edu/graduate/phd/practicum> for more information). Doctoral students find a faculty member who is willing to team-teach an undergraduate course with them. As teaching interns, doctoral students help design syllabi, grade homework, prepare exams, conduct recitations, and teach classes while receiving feedback from the faculty member. The teaching interns report how helpful this experience is in developing confidence in a classroom environment and obtaining jobs after graduating. Brightman (2009) advocates for the course outline for the Robinson College of Business at Georgia State University’s model for doctoral teaching training. This model offers a 15-week list of topics and assignments applicable to any discipline.

The Center for Teaching and Learning (CLT) at the University of Pennsylvania offers a CLT Teaching Certificate (see <https://www.sas.upenn.edu/ctl/grad/certificate.html> for more information). To earn this certificate, doctoral students complete four components: 1) pedagogical discussion and training through attendance at five teaching workshops; 2) teaching experience through serving as a teaching assistant or instructor; 3) observation and review conducted by a CLT staff member; and 4) development of a teaching philosophy.

Doctoral students prefer having mentors committed to helping them throughout every phase of their doctoral programs (Gardner, 2009; Stowell et al., 2017). In our research, less than one quarter of the doctoral programs provide mentors to doctoral students for their teaching. One helpful approach could be institutions offering or requiring doctoral students to obtain teaching certifications (Grasgreen, 2010; Robinson & Hope, 2013).

Marx et al. (2016) recommends four approaches to doctoral teaching preparation for business schools:

- a) The University of Michigan offers a three-year Teaching Development Program. It includes classroom observations, classroom culture seminars, two, second-year courses focusing on developing teaching competences, and a full third-year teaching assignment with observations and feedback culminating in development of a teaching portfolio.
- b) Boston College's Organizational Studies Department provides a 13-week teaching practicum course combining first- and second-year doctoral students. In addition to required reading and writing assignments, students present 15-minute lectures on learning from feedback received. Completion of journal entries for each class and submission of a teaching portfolio also are required.
- c) Saint Louis University requires its doctoral students to complete a certification program offered by the institution's center for teaching excellence. Attending at least 10, 2-hour effective teaching seminars, developing a teaching portfolio, receiving feedback on video-taped class lectures, and faculty mentoring are program requirements. Departments are encouraged to develop and require students' participation in discipline-specific seminars.
- d) The University of Massachusetts requires its doctoral students to complete an intensive six-day teaching seminar that includes one full day of sessions after the first year, four full days after the second year (which precede independently teaching two semesters of a course), and one full day for third-year students for reflections on their teaching experiences and development of a teaching portfolio.

The Association of College and University Educators (ACUE) responded to educational research over the past four decades affirming teachers are the most essential factor affecting student learning (Gyurko et al., 2016). ACUE, in collaboration with the American Council on Education, offers a Certificate in Effective College Instruction. Participants can earn online certificates independently or in cooperation with an institution's teaching and learning center. Delivered through 28 modules, doctoral students can earn this certificate concurrently with other instructional and research requirements, so as not to elongate their programs. Earning this Certificate in Effective College Instruction ensures teachers have the core competencies of instructional practice including how to design an effective course and class, establish a productive learning environment, incorporate active learning techniques, promote higher-order thinking, and assess instruction and learning. While teachers become more competent, confident, and satisfied, greater student success and enjoyment of learning are anticipated benefits. Since these certification programs are open to doctoral students in all academic disciplines, kinesiology students could be encouraged to take advantage of these learning opportunities.

Certification programs and centers for teaching excellence exist because doctoral students and the institutions hiring them support completion of teacher-training coursework (Brightman & Nargundkar, 2013). Doctoral students should be encouraged to attend teaching effectiveness workshops offered by campus teaching and learning centers during their programs of study. Lund et al. (2019) state that

kinesiology doctoral students can benefit from mentoring programs addressing research, teaching, and service to optimally prepare them for careers in higher education. They emphasize, “Developing good teaching skills is an important part of doctoral training and not be neglected” (p. 345). Silverman (2003) adds, “By helping students become competent teachers, we can help them adjust to their new positions, feel good about their teaching, and have a better chance of managing their various roles... Helping our students learn to help their students learn will give each new faculty member some of the skills that are needed to be successful” (p. 79).

The most important implication for practice from our research is institutions need to better prepare doctoral graduates to teach and help them avoid many frustrations common to inadequately prepared teachers. Another implication for practice comes from Barkley and Major (2016, 2018) and Barkley, Major, & Cross (2014) who advocate the importance of all teachers learning about the sequence and inter-connectivity of curricular design, instructional delivery, and assessment. While doctoral program faculty may be concerned that investing time in better preparing graduate students to teach effectively, Shortlidge and Eddy (2018) found there was no negative impact on research preparedness or publication numbers when PhD students were provided training on effective teaching.

5. Limitations and Future Research

This study provides an initial evaluation of the teaching and research preparation of Ph.D. students; however, one of its main limitations was the low response rate. While we were able to gather data from 20% of faculty program coordinators, which is adequate in survey research, the variability in programming across institutions might necessitate a larger sample size for definitive conclusions. Additionally, while every effort was made to establish validity and reliability, a lack of response during survey development may have resulted in leaving out potential question responses. Finally, this study focused on perceptions faculty program coordinators had in terms of their students’ skills, abilities, and readiness. Future research should create an instrument to give to doctoral program candidates in kinesiology and other disciplines to evaluate their readiness and explore areas in which they feel underprepared. Additionally, future qualitative research could be conducted to understand why all disciplinary programs are more focused on research and how program coordinators feel about effective doctoral education and preparation.

6. Conclusion

The Ph.D. remains a research-focused degree as this study confirms. Attaining advanced disciplinary knowledge and conducting and collaborating on research projects are much more frequently required in doctoral programs than are planning and developing courses, gaining teaching experience, and facilitating active learning in courses taught. Graduate faculty coordinators believe their doctoral students are much better prepared to design and implement research projects at a higher level of competence than they are competent to design and deliver undergraduate courses in their discipline.

Emphasizing research skills and abilities should not mean neglecting preparing doctoral students to develop their pedagogical skills and become effective teachers. Graduate faculty in kinesiology have the opportunity to revise how they prepare their students for the job market, most often in colleges where faculty have significant teaching responsibilities. Ensuring doctoral students know about and have access to college teaching courses, teaching workshops, a teaching mentor, and teacher certification programs can help them realize the importance of developing and enhancing their instructional abilities in preparation for academic careers.

Accountability for student learning is the new currency in higher education, with the associated expectation that doctoral program graduates need to learn how to teach effectively during their doctoral programs. Faculty are encouraged to mentor doctoral students not only in research skills but also in pedagogical skills. Helping graduates develop their pedagogical knowledge and pedagogical content knowledge, such as through the required completion of a college teaching course or certification program, is the optimal way to improve teaching in all disciplines.

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