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# Theory to Practice: Implementation and Initial Impact of an Online Doctoral Program

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## Abstract

This article describes successes and challenges of the first implementation of an online Ed.D. program that impacted students' professional growth and practice. Based on an analysis of student survey comments, student interviews, and faculty interviews at the end of the first year, program improvements were made for future cohorts. Lessons learned and best practices shared in this article will be useful to other institutions embarking on and engaged in online programs and professional practice degrees.

## Introduction

The College of Education at the University of Florida participated in the Carnegie Project on the Education Doctorate from 2007-2010. This article reports the successes and challenges of the initial implementation of an online Professional Practice doctoral program in Educational Technology, as well as the ways in which students in the program are acquiring habits of mind, skills, and heart (CPED, 2010) as a result of the first year of the program. The findings have resulted in changes to the first year of the program for the second cohort of students. A description of implementation and research, and the discussion of best practice could be useful to other institutions engaged in professional practice degrees, online doctoral programs, and doctoral programs in Educational Technology.

## Ed.D. and Ph.D. Distinctions

Distinctions have been made between terminal degrees in the field of education where the Doctor of Philosophy, Ph.D., has been defined as the preparation of stewards of a discipline and the Doctor of Education, Ed.D., as preparing stewards of practice (Neumann, 2005; Perry & Imig, 2008; Shulman, Golde, Conklin, Bueschel, & Garabedian, 2006). According to this distinction, students earning a Ph.D. are likely to work in more research-focused settings to explore, discover and disseminate new knowledge and students earning an Ed.D. are likely to apply research-based knowledge and to generate contextually based knowledge to improve and advance practice (Shulman, 2005). The Carnegie Project on the Education Doctorate (CPED) has recently worked with over twenty institutions of higher education to conceptualize the ways in which Professional Practice Ed.D. programs can be equally rigorous yet distinctive from traditional Ph.D. programs. The participating institutions have attempted to create experiences that will result in the desired outcomes defined by CPED (CPED, 2010; Perry & Imig, 2008, Shulman et al., 2006). This article shares formative data from a Professional Practice Ed.D. program in Educational Technology.

## Description of the Ed.D. in Educational Technology

The Ed.D. in Educational Technology enrolled its first cohort of 26 students (28% Male, 72% female) in fall 2008. The enrolled students are all employed full-time as teachers, instructional designers, administrators, or in other roles in an education-related context. The program is cohort-based and offered primarily online with a one-week campus session each summer. Focused on "educational settings rather than academic content" (Marsh & Dembo, 2009, p. 73), the goal of the program is to prepare practitioner scholars who can identify educational problems, apply theory and research to problems of practice, and be "agents of change" in the lives of individuals, families, schools, and communities (CPED, 2010).

Theories of adult learning as well as prior research on communities of practice and online learning informed the design of the online doctoral program. The relevance of instructional content and its applicability to real-world environments plays a decisive role in the learning experiences of adult learners (Butterfield & Nelson, 1989; Knowles, 1984). In a professional practice doctorate, students who are working adults should be able to transfer knowledge and skills to professional practice contexts. It was therefore considered crucial to design instruction such that Ed.D. students could solve practical problems using resources that they would use in practice, and could produce artifacts that are relevant and useful in the original contexts of identified problems (Brown, Collins, & Duguid, 1989). Likewise, for learning to be transformational, students had to be able to negotiate their own purposes or values rather than act according to external or imposed purposes and values, had to be exposed to diverse perspectives, and had to engage in both reflection and reflective discourse (Daloz, 2000; Mezirow, 2000). The Ed.D. program was thus designed to be cohort-based, where a community of learners would move through the program completing specific online courses. At the same time, opportunities were created for the cohort to regularly interact synchronously and asynchronously in learning environments outside of their courses to solve authentic problems that they identified in their practice.

## Online Coursework

During the first two years of the program, students took a set of core courses that were considered foundational to the field of Educational Technology and a set of cognate courses that related to their specific interests in K-12, higher education, corporate education or other educational environments. All online courses in the program were designed to include multimedia resources (Moreno & Valdes, 2005), synchronous and asynchronous interactions, opportunities for reflection (Ainsworth & Loizou, 2003), and multiple assessment formats (McTighe & O'Connor, 2005). Support for a variety of learning styles was provided via distributed practice with concepts and skills (Cepeda, Pashler, Vul, Wixted, & Rohrer, 2006).

## A Community of Practice

The challenges associated with enculturating students into a community of educational researchers have been well documented in recent years (Eisenhart & DeHaan, 2005; Labaree, 2003). Students of Educational Technology bring varied backgrounds (e.g. K-12, higher education, corporate education, non-profit education) and subject-matter expertise (e.g. science, math, information technology, human resources, graphic design) to graduate programs, adding to the challenge of enculturating them to research in the field. In addition to two courses that oriented students to doctoral studies in Educational Technology and research in Educational Technology, non-course interactions were consciously integrated into the first year in order to enculturate students into the Educational Technology field, the expectations and rigors of doctoral study, and research areas in Educational Technology.

According to Wenger (1998), a community of practice is a "shared history of learning" (p. 86) in which participants continually negotiate the meaning of what they are doing through interaction. In graduate education, communities of practice have been found to facilitate understanding and the development of graduate students (Lesham, 2007; Wisker, Robinson & Shacham, 2007). In an attempt to create a community of practice where students could interact with each other outside of coursework to become scholars in Educational Technology, and achieve their shared goals and resolve common challenges, several asynchronous and synchronous interactions extraneous to coursework were integrated into the program design. A virtual space was created where the cohort could interact about the program outside of their courses and as a repository for resources. Monthly real-time synchronous sessions provided additional opportunities for mentoring and for developing connections between theory, research, and practice. Session topics ranged from program questions to information sharing related to conferences or professional events. Both asynchronous and synchronous online interactions provided students with opportunities for guided participation (Rogoff, 2003) or legitimate peripheral participation (Wenger, 1998). In addition to online interactions, a one-week campus-based experience was included to foster connections and community among the students and faculty and to expose students to other faculty, students, and resources on-campus. To facilitate small group interactions within the cohort, inquiry groups of 5-7 students with common interests were also formed, similar to the leader-scholar communities explained by Olson and Clark (2009).

## Making Connections to Practice

A major challenge for professional practice students engaged in doctoral studies is finding ways to connect academic content and assignments to their professional environments. In the context of adult learning that is transformational (Mezirow, 2000), situated (Lave & Wenger, 1991), and relevant (Knowles, 1984), all assignments and projects were designed to help students make connections to their professional context, naturally allowing for flexibility within certain parameters. The synchronous, asynchronous, and on-campus experiences encouraged students to reflect on how program requirements could be embedded in their practice, could be implemented in practice, and could influence their practice. Further, the integration of university-based learning and professional practice can lead to the development of important habits of mind including but not limited to: persistence, intentionality, flexibility, reflexivity/metacognition, critical-mindedness, creativity, clarity of expression in oral and written communication and a stance toward continuous learning and professionalism (Costa & Kallick, 2008). It was hoped that students would develop these habits of mind through planned synchronous and asynchronous experiences both within and outside of courses in the Educational Technology program, where they were expected to consistently read, participate in professional conferences and organizations and otherwise, engage within the scholarly community.

In fall 2009, the program at the University of Florida was the only Ed.D. offered in Educational Technology that was modeled on the Carnegie Professional Practice doctorate and offered online. A new faculty member led the evaluation of the first year of the program in an attempt to explore:

- successes and challenges in the first year implementation of the online doctoral program
- if and how students had applied the knowledge and skills gained in the program to their professional practice.

**Methodology**

The first phase of the Carnegie Project on the Education Doctorate concludes that Ed.D. graduates should be “scholarly practitioners” (CPED, 2010), individuals who are agents of change, are able to solve problems of practice, who use inquiry to take decisions and engage in critical examination. Correspondingly, the Ed.D. in Educational Technology aims to prepare practitioners who will apply their learning from the online program to their practice, and who will use knowledge gained during the program “to solve educational problems” (Shulman et al., 2006, p. 27). To study students’ transfer of learning to practice, Kirkpatrick’s (1984) training evaluation model was chosen as a framework that encompasses participant feedback on the learning experience and the application and impact of learning in participants’ work environments. Kirkpatrick’s (1984) model contains four levels: Reaction to learning; Learning or increased knowledge or skills; Transfer or changes in behavior and actions; and Impact or changes in the environment due to actions or changed behavior. Student surveys, student interview protocols, and faculty interview protocols were created to include questions pertaining to Reaction (Level 1), Learning (Level 2), and initial Transfer and Impact (Levels 3 & 4) of the evaluation framework.

An anonymous online survey completed by 16 of 26 students at the end of the year included items about students’ satisfaction with program components and their perceptions of learning and relevance (Kumar, Dawson, Black, Cavanaugh & Sessums, 2011). This paper focuses on students’ open-ended responses from the survey, as well as data from student interviews and faculty interviews. During their second year in the program, all the students (n=26) were invited to participate in semi-structured interviews with a new faculty member who had not been involved in the program implementation. Nineteen students participated in 20-40 minute interviews about their perception of learning and professional growth as a result of the program and their application of learning and impact from the program in their work environment. Given students’ professional work experience before their participation in the program, care was taken to identify the contribution of the program to their professional growth. For example, this is a follow-up question used during the interviews: “was this an initiative you had planned before you began the Ed.D. or one you would have developed regardless of your participation in the program?”

Simultaneously, the new faculty member conducted semi-structured 20-45 minute interviews with the four faculty members involved in the first implementation of the Ed.D. program. The interview protocol included Level 1 questions about the strengths of the program, challenges faced during Year 1, and faculty satisfaction with learning environments and peer interaction; Level 2 questions about student learning; and Level 3 questions about their knowledge of changes in student behaviors and student application of learning to the work environment.

The open-ended survey responses, student interview transcripts, and faculty interview transcripts were first coded separately in NVivo software and analyzed using an inductive approach. The initial analysis resulted in the following categories:

- Reasons for joining the Ed.D. program; Strengths of the program; Challenges during Year 1; Knowledge and skills gained; Changes in approach or behavior; Application of learning at work; Suggestions for improvement (from student survey comments and interviews)
- Goals of the Ed.D. program; Strengths of the program; Challenges during Year 1 implementation; Observed changes in students; Intended changes/improvement (from Faculty interviews)

Data from all three sources were then triangulated (Denzin, 1978) and common themes at the four levels of the evaluation framework were identified. These data are presented here in two major sections: Reaction to Learning (Perceived Strengths and Perceived Challenges of the Program) and Increased Knowledge or Skills (Application of Learning to Professional Practice).

**Reaction to Learning: Perceived Strengths of the Program**

Table 1 summarizes the themes emerging within the first purpose of the evaluation (i.e. to identify successes and challenges in the first year implementation of the online doctoral program). Specifically, this table highlights successes of the first year implementation. Each theme is discussed in more detail below.

Table 1: Strengths of the program

	Students	Faculty
High Quality of Online Instruction		
Faculty Expertise in Online Learning	X	
Relevance of Program to Professional Practice	X	X
Technical Infrastructure & Virtual Environments	X	X
Campus-based experience		
Building of Community and Peer Interaction	X	X
Faculty Collaboration		
Program Planning & Composite Mentoring		X

**High Quality of Online Instruction**

The relevance of the program to students’ professional practice, faculty expertise in online instruction, and the quality of technical infrastructure and virtual environments were perceived by students as contributing to the high quality of online instruction in the program. In their survey comments, 67% of students cited the faculty members and their support as the main strength of the program. Students also praised the clear structure of the online program and the high quality of courses, and expressed high satisfaction with the technologies used for synchronous and asynchronous communication. Twenty-five percent of students highlighted the emphasis on relevance to their practice as a program strength, commenting that they were encouraged to relate or apply all the assignments in their coursework to their professional environment. A doctoral student who is a high school teacher commented, “It has been ideal for me, for the research I want to do. Everything I do is very relevant. I’ve always been able to do all my classwork within my classroom.” Likewise, faculty reflected that one of the strengths of the program was that “it leaves the students in their professional context and allows them to practice with their learning within that context.”

**Campus-based Experience**

Students expressed high praise for the campus-based experience at the end of Year 1 for its contribution to the building of community and camaraderie in the cohort, and suggested that it be included at the beginning of the first year for future cohorts. Based on their positive observations of student-student interaction in the summer session, faculty members reported that they planned to include a “kick-off” summer seminar for members of future cohorts. Students could thus meet each other before the program began, and be more engaged in the program and with the faculty.

**Faculty Collaboration**

Weekly meetings and regular communication amongst faculty helped to deliver consistent information to students about policies and requirements in the program. When asked about the strengths of the program, all the four faculty members highlighted faculty collaboration as the strength of the program and the reason for their successful interactions with the students. One faculty member stated,

I think one of the advantages of this program is that faculty discuss amongst themselves the progress of the students, they discuss the assignments that the students are undertaking and sit around and talk - Who do we need to be concerned about? Who is doing incredible work? Which students could be working together? So we try and suggest these connections to help them build their own learning networks.

**Reaction to Learning: Perceived challenges during the program**

Table 2 summarizes the themes emerging within the first purpose of the evaluation (i.e. to identify successes and challenges in the first year implementation of the online doctoral program). Specifically, this table highlights challenges of the first year implementation. Each theme is discussed in more detail below.

Table 2: Challenges faced by students and faculty in the program

	Students	Faculty

Additional Responsibilities for Faculty		
Faculty Workload		X
Administrative Services	X	X
Library Support	X	X
Enculturation in a doctoral community		
Lack of knowledge of non-course expectations	X	X
Academic Interactions outside of Courses	X	X
Online Community-Building		
Student Participation in non-course activities	X	X
Online Peer Interaction	X	X
Multiple virtual environments	X	X

#### Additional Responsibilities for Faculty

Students had cited the high quality of instruction and faculty expertise as a strength of the Ed.D. program in their interviews. A challenge associated with program development, administration, and timely and intense interactions between faculty and students, however, was the faculty workload. Faculty attempted to be available for students 24/7 due to the online nature of the program and to be supportive because they understood that doctoral programs can be challenging and isolating. They designed and implemented a cohesive program in addition to their individual courses, dealing with administrative procedures associated with the first offering of a new degree program, attending to students' concerns, logistical issues, and also advising 26 students and designing individual programs of study over and above their teaching and research responsibilities. One faculty member suggested that some form of administrative help with forms, transcripts, and credit transfers would streamline the administrative process for online Ed.D. students. Due to the online nature of the program, and the fact that it was being offered for the first time, faculty members were the main point of contact for students' administrative concerns, technical questions and access to campus resources. Students perceived this as problematic because they did not want to contact faculty about their concerns with credit transfers and financial aid in addition to regular coursework. One student worried about appearing "needy" when constantly writing to a faculty member, adding that having a different contact for administrative issues "would be great."

Another challenge mentioned by the students was their familiarity with library resources. One-third of the students' survey comments indicated they did not know how to access the library during their initial courses and had been unsure how to use resources to complete their assignments. Students were provided access to librarians in their doctoral orientation course, and attended two synchronous sessions where librarians delivered instruction. Nevertheless, 50% suggested providing library orientations, services, or instruction at the beginning of the program.

#### Enculturation in a Doctoral Community

A significant theme that emerged in students' open-ended survey responses, student interviews, and faculty interviews was students' lack of awareness about the expectations and the nature of doctoral work. Echoing students' comments that they did not know that non-course readings or activities would be required in the Ed.D. program, and that they were surprised by the academic workload and expectations, all four faculty reflected that the students did not appear to be aware of the nature of doctoral studies. One faculty member explained,

You have to be committed, figuratively and literally committed to doctoral study. It is life changing. You have to adjust your life to do a degree program, especially at this level. You have to make compromises in your personal life and habits so that you can complete coursework with your colleagues under deadlines, and it takes a serious commitment. It's not a part-time commitment. It's a full-time commitment. So we have to make sure students understand that in future cohorts.

Another faculty member hypothesized that in the online environment, it is more important to "convey very quickly that a doctoral degree is different than any other degree they're ever going to earn. I think a lot of them thought it was going to be taking the courses, completing the requirements and being done." All of the four faculty members were concerned that students had not become enculturated into "thinking like doctoral students" sufficiently in the first year of the program, and reflected on how this could be achieved in the second year. Faculty members intended to use synchronous sessions in the future to encourage students to present information about their professional experiences, recent readings, conferences, or share challenges that they faced during the program or in their professional practice.

#### Online Community-Building

Although the faculty members felt that synchronous sessions had worked well for students to ask program-related questions in the first year of the Ed.D. program, they were disappointed with low student participation in non-course related synchronous and asynchronous interactions in the program. Aligned with students' lack of awareness about non-course expectations, few students participated in activities that were not explicitly associated with a course or a grade, leading to low peer support and sense of community. According to the faculty, they had structured various avenues for peer interaction into the program design because they believed in the importance of community-building. However, they had not anticipated low student participation or that students would look to the faculty rather than their peers for support:

They get so much from each other and from being in groups and from interaction with other professionals and seeing how people are handling a scholarly project and how people are handling an annotated bibliography. There is so much that is new to them, so having them be able to ask each other and see each other's examples are great teaching tools. We had hoped they would rely more on each other.

Both students and the faculty members attributed inadequate student participation and peer interaction outside of required coursework to students' professional and personal lives. Several students cited time to meet or collaborate online as an obstacle, stating that they would have benefited from engaging more with their peers. Faculty understood this problem. One faculty member explained, They're learning to be in a community of scholars, and they've got their community at work. Obviously, they've got all their personal communities. So they're really trying to blend and figure out a bunch of different communities.

Suggestions to build community and increase peer interaction in the future were made by both faculty members and students. These included requiring non-course interactions, setting ground rules or a protocol for peer discussions, requiring group work at every stage in the program, having a faculty member lead inquiry groups and model or facilitate interaction, and the formation of inquiry groups by students themselves instead of faculty assigned groups.

#### Knowledge Gain and Changed Approach to Professional Practice

In addition to exploring faculty and students' perceptions about strengths and challenges in the first year of implementation, a goal of this research was to determine if and how students had applied the knowledge and skills gained in the program to their professional practice. The following themes related to this purpose emerged during student and faculty interviews (Table 3):

Table 3: Perceived Learning and Change in Approach

	Students	Faculty
Increased confidence with research and analysis	X	X
Improved understanding of the field of educational technology and online education	X	X
Meaningful use of new technologies in classroom teaching	X	
Learning through interaction with experts in the field	X	
Changed approach in work environment	X	X

At the end of the first year, students reported improved research skills, an improved understanding of research and research methods and changes in their reading habits. One student attributed this to the content of the program,

Everything that I am doing is relevant so far. I hate to read but this program has made me read and make that part of my life. That has made me more knowledgeable. And I am reading more research. And I'm constantly throwing what I have read out there, in my meetings. (A.B., Middle School Teacher)

At least half of the students interviewed acknowledged a deeper or broader understanding of the field of Educational Technology at the end of their first year. Additionally, they also highlighted the importance of exposure to theory and research and its relevance to their professional practice. A student who works in corporate education reflected, "The exposure to research definitely helps, you are introduced to things that you would just not have read as an instructional designer," (J. K., Instructional Designer) while another student who teaches undergraduates stated, "I am much more careful with my instructional planning and my observance of sound instructional design principles and connecting objectives to assessments. It

has improved my instruction quite a bit" (C. D., *Instructor*). Students were particularly appreciative of both the exposure to learning theory and online instructional design. Two students commented,

I am benefiting from the theory that I never had. It has influenced my teaching. The theories of how people learn, and appealing to different people when teaching. The program is a great model of online education and how to implement it effectively. I draw on it when putting together modules for my classes. (E.F., *High School Teacher*)

Seeing the implementation of online courses in this program, I can see how online education can work really well. I do not come from an education background, so in my studies, I was handed a book and taught traditionally. This exposure has made me more intentional in why I do certain things. (G.H., *High School Teacher*)

Students claimed that the exposure to well-designed online activities, free online resources, and different types of social media in the online program had influenced their planning of lessons and teaching in the classroom. Further, they now independently found online professional development resources and initiated interactions with experts in the field. Five students stated that they now "recognize issues, problems, opportunities for research" in their work environments. Two examples provided by students:

As a technology teacher, it was amazing how little I knew about what to use in the classroom, how to find good research, and how to read and use case studies after my Masters degree. I have now become more analytical in my approach. (J.J., *High School Teacher*)

Before this program I approached technology from the perspective of new programs and new gadgets. I used to push technology, believing, "you need to have this in your classroom, you can't do without it." Now I take an analytical role, I question the value of technology, I consider how time and space appropriate it is. My perspective of technology changed from it is the end point to part of the journey. I look beyond the day-to-day piece, I look back, and think about whether it was valuable. The program has become a part of what I do. (K.L., *School Leader & Professional Developer*)

Students' comments were reinforced by three of the four faculty members who also stated that they had observed growth and scholarly or "bigger picture" thinking in students. One faculty member stated:

I have seen them building their knowledge, becoming more scholarly aware of the issues, not in terms of just seeing the academic aspects of the issues, but truly thinking like a scholar; thinking like a scientist. I've seen...in several cases, students describing issues in their jobs from a new perspective now that they've learned from the readings, from the course assignments, and they're beginning to look at more closely, they're looking at what they're doing with a scientist's eye as opposed to merely a practitioner's eye.

## Discussion

Evaluation data can be used to serve many different functions (Conley-Tyler, 2005). The first year evaluation data presented here serves two purposes; it guides program improvement efforts (Love, 1991) and informs others interested in developing similar programs (Owens & Rogers, 1999). The significance of the findings is first discussed here in the context of changes that resulted to the Ed.D. program in Educational Technology. Notwithstanding the specific context in which this research was conducted and the small sample, lessons were learned in this implementation and research that will be useful to others engaged in the development and implementation of online programs or professional practice programs. Some best practices for the implementation of online programs are thus also suggested that might be valuable to other educators.

### Significance for the Ed.D. in Educational Technology

In implementing the Ed.D. in Educational Technology we focused on creating quality online coursework, building a community of practice, and making connections to practice. Students in the first year of the program were highly satisfied with the quality of online instruction and with the connections made in the program to their professional practice. Students and faculty praised the on-campus experience as a community-builder, but also asserted that online asynchronous and synchronous interactions extraneous to courses could be improved to facilitate sense of community. Likewise, they suggested clarifying and emphasizing the expectations for non-course interactions and enculturation to the Educational Technology field.

Following this research, several elements of the first year were strengthened or changed for the next cohort of students that entered the Ed.D. program:

- **On-campus Orientation Session.** To facilitate the building of community at the beginning of the program, students were required to attend a campus-based two-day orientation session intended to introduce them to the program and procedures, set expectations, and facilitate student-faculty and student-student interactions.
- **Support.** Students received an orientation to library resources on-campus, followed by structured online library instruction developed in collaboration with education librarians. Library help forums are provided in all online courses so students can request help from the librarians if needed. The administrative process (transfer of credit, programs of study) was streamlined to the extent possible and a student handbook of expectations, policy and procedures was created. The handbook is hosted in an online space that students can bookmark and that faculty can regularly update.
- **Online Coursework.** Given students' positive response to online instruction, faculty expertise in teaching online, and the cohort structure, the only change made to online coursework was a more conscious sequence and structuring of courses so that subsequent courses built on preceding ones. Increased measures for accountability that would ensure student progress as a cohort were also included.
- **Online Community-Building.** A new platform was introduced for non-course communications and community-building with the new cohort of doctoral students. Students can create profiles, participate in discussions, share files and announcements, and communicate in one virtual learning space, instead of multiple environments outside of courses. Students are required to participate in monthly meetings in this virtual community where all faculty members share their current work, prior experiences, or best practice about specific aspects of doctoral study. Inquiry groups were created but students have the option of switching groups each semester as their research interests evolve and they get to know each other. We plan a peer and alumni mentoring network (Loss, 2009) as we enroll more cohorts.
- **Emphasis on Doctoral activities.** The importance of setting time aside for non-course activities, doctoral studies, professional networking, and reading to students' success in the program is emphasized during all interactions - within courses, in the virtual community space, in synchronous interactions, and informal interactions with faculty. Research and online resources that might help students succeed in managing their work-life balance, staying focused on their professional goals, and yet become scholars are provided.
- **Emphasis on Connection to Practice.** The first cohort reported tremendous success in connecting the content of the Ed.D. program to their professional practice. They reported integrating new technologies at work, adopting a changed approach due to their knowledge of research and theory, and application of knowledge and theory in their work environment. All assignments and activities in the program continue to emphasize and encourage explicit connections between program content and students' professional practice.

### Significance for Online Programs

Based on the research findings, some suggestions are made here for best practices in online programs:

- All online programs should encompass online courses that are designed based on best practices with respect to instructional design, student-student interactions, faculty presence, community-building, and different types of assessment. The implementation of this doctoral program taught us that it is also important that the courses in an online program are sequenced appropriately, that each required course builds on the preceding one and that there is a clear progression of knowledge and skills that enable students to succeed in the program. A clear structure and sequence of courses completed by a cohort ensures that all students have access to the same knowledge and skills, that courses and enrollments can be planned, and that faculty do not have to design individualized programs of study for each student in the program. The leadership and participation of faculty with expertise and prior experience in online teaching and learning can greatly enhance an online program.
- The importance of technical and administrative support for student success is usually taken for granted in online programs. We posit that additionally, library instruction and support is crucial for all students to access online databases and appropriate resources that will not only help them complete assignments but also increase their exposure to peer-reviewed scholarly materials. Online students who have taken a break from academic endeavors need an orientation to current digital resources, online databases, and bibliographic management technologies.
- Faculty workload in planning, implementing, and managing an online program in addition to their regular research, teaching, and service activities should not be underestimated. Faculty members managing an online program must understand administrative procedures, collaborate with administrators, and ensure the different types of support that students at a distance require in an online program. All online programs should ensure that at least one faculty member on the program team has the institutional knowledge necessary to bring together cohesive and multi-faceted support and that faculty members are provided reasonable incentives to develop and lead such programs.
- If possible, a face-to-face orientation session or a virtual real-time orientation session should be incorporated at the beginning of a program and participation should be mandatory for all students. An initial orientation session makes it easier to build community, make expectations explicit to students, and reduce transactional distance (Moore, 2002), student isolation, and student apprehension in online programs. Regular required synchronous virtual meetings of all students and faculty with a focused agenda (e.g. monthly or every two months) can help to reinforce sense of community in an online group of professional students.
- An online program should include one virtual space that is not specific to any one course but hosts all program documents, enables online students to interact with each other and faculty, and also includes social media to allow for social networking-like interactions. Such a virtual space reinforces the concept of a *program* and a *cohort* as opposed to a set of online courses taught by different faculty. The virtual space should be introduced and guidelines provided to students and faculty to ensure that all communications and documents are in that virtual space. The use of multiple sources of information and separate tools, logins and passwords can lead to dissatisfaction and frustration among students.

## Conclusion

This research indicates that an online doctoral program that encompasses high quality instruction, community-building, and explicit connections to students' professional environments can result in students' application of skills, theory and research to their professional practice. Given the increase in online programs in institutions of higher education in the last decade, it is important that all educators share their innovations, challenges, and best practices during implementation and research in online programs. The sharing of practice will benefit others engaged in similar endeavors and improve the quality of online programs.

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