An Online Doctorate
for Researching Professionals

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An Online Doctorate for Researching Professionals
Swapna Kumar and Kara Dawson

An Online Doctorate for Researching Professionals

Program Design, Implementation, and Evaluation

SWAPNA KUMAR AND KARA DAWSON

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Preface and Acknowledgements

The model of an online professional doctorate that we present in this book is based on our experience with designing and implementing the online EdD degree in educational technology offered at the University of Florida. The journey began in 2006, when Kara and her colleague Rick Ferdig (now at Kent State University) began to recognize that our university's PhD program in education did not meet the needs of all students. Like most PhD programs, ours was oriented toward students who aimed to work in an academic environment, teaching and conducting research, yet a significant number of our doctoral candidates had no interest in an academic career. Many were already working professionals whose goal was to apply their new knowledge in a particular context or, in some cases, simply to strengthen their credentials. These students typically attended school part-time, often commuting to campus after work, and took years to finish the program. We made accommodations for them as best we could, by adjusting course assignments to better meet their needs and by working out schedules that allowed them to pursue their degree on a part-time basis. Despite these accommodations, however, the PhD program was an awkward fit for them.

We had also begun receiving numerous inquiries from working professionals elsewhere in the country who were interested in earning a doctoral degree while maintaining their existing jobs. Although such an arrangement was clearly incompatible with our campus-based PhD

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program, it was not beyond our powers of imagination, given that Kara and Rick had recently launched our university's first completely online MEd and EdS programs. Students applying to these programs tended to have a particular interest in educational technologies and in how these technologies could be used to support learning in the situations in which they were employed. We wondered whether we could design an online doctoral degree—one that would be as rigorous as, but different from, our campus-based PhD program—to serve the needs of students who planned to continue working in a professional context after graduation and whose interests lay in the field of educational technology.

At about the same time, a seminal article, "Reclaiming Education's Doctorates: A Critique and a Proposal," appeared in *Educational Researcher*, arguing that existing doctoral programs in education—whether the degree awarded was a PhD or an EdD—were failing on a number of fronts. The article's authors, Lee Shulman, Chris Golde, Andrea Bueschel, and Kristen Garabedian (2006), made the case for a new type of degree, one that would integrate research and practice and would be explicitly designed to serve the needs of working professionals. They also pointed to the urgent need for such a degree. Inspired by the article, we shared our thoughts with our department chair, Tom Dana, who encouraged us to create a plan for an online EdD. Almost simultaneously, Kara was asked to serve on the university's Carnegie Project on the Education Doctorate (CPED) committee. Launched in 2007, with the University of Florida as one of its founding members, CPED's original mission was to reconceive and redesign the EdD degree as one specifically intended for professional practitioners, as distinct from a PhD in education. Although CPED informed our early thinking about professional doctorates, online programs were not a focus of CPED's work at the time, nor was the field of educational technology, which has an unusually broad scope of application and draws students from a diverse array of backgrounds. Moreover, CPED was firmly oriented toward programs offered in the United States, whereas we became engaged in the work of incorporating what we had learned about the professional doctoral programs offered in England and Australia, where such programs had been in existence for decades. Ultimately, then, the model that we developed differed from CPED's framework.

After much planning, we enrolled our first cohort of professional doctoral students in fall 2008. Ours was one of the first online EdD degrees

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in educational technology offered by a public research university in the United States and designed for researching professionals. The initial teaching faculty consisted of Cathy Cavanaugh, Erik Black, and Christopher Sessums, in addition to Kara and Rick Ferdig. Swapna joined us in fall 2009 and continues to serve as our EdD program coordinator and lead program researcher.

We would like to thank our families, the colleagues who worked with us on the University of Florida's online EdD in educational technology, and the colleagues and PhD students who have collaborated on our research in the program. We are also grateful to the students in each cohort, who provided feedback on various aspects of the program; their comments allowed us to improve its quality, its relevance to student needs, and its eventual impact in educational environments. Finally, we extend our thanks to Jacki Donaldson, who edited several chapters of the first draft of this book.

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An Online Doctorate for Researching Professionals

Introduction

Doctoral education as known in North America today can be traced back to the educational philosophy of Wilhelm von Humboldt, who, in 1810, founded the University of Berlin (renamed Humboldt University in 1949). The first PhD graduates in the United States and Canada matriculated in 1861 and in 1897, respectively (Bourner, Bowden, & Laing, 2001; Kot & Hendel, 2012). Doctoral programs are offered in different forms and with various requirements across the disciplines, but their common aim is to graduate individuals capable of conducting independent research and advancing knowledge in their fields. The early twentieth century saw the emergence of doctoral programs that sought to address the needs of professionals in a variety of settings where research could inform practice. Called *professional doctorates*, *practitioner doctorates*, *work-based doctorates*, or *professional practice doctorates*, these doctoral programs also took diverse forms as they gradually expanded across and within disciplines.

The past decade has seen the development of both on-campus professional doctorates with varying degrees of online components and similar programs that are completely online. This has led to a need for educators and administrators to design educational experiences that (a) align the goals and outcomes of a professional doctorate with the needs of professional students, (b) implement lessons learned from prior research on doctoral education and adult learning, and (c) integrate research and practice to support distance learners, thus helping them to succeed in online environments. Fostering scholarly habits of mind and research skills through online learning can be challenging, as can

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the conceptualization and implementation of an online terminal degree. A doctoral program, be it a research doctorate or a professional doctorate, is inherently different from a master's program, which usually consists of a set of courses and projects and may include an internship or practicum. To prepare both independent researchers and members of a scholarly community, a doctoral education generally provides various types of experiences; it might include coursework, one-to-one mentoring, independent work, participation in research teams, and involvement in a wide variety of forums that lead to enculturation in a community of scholars. An online doctoral program must include such experiences as well as others that are possible only in online environments (e.g., participation in a network of international scholars on Twitter). As we have presented our work at conferences over the years, we have encountered individuals with extensive experience in campus-based doctoral education who have struggled with the design and implementation of an online doctoral program, as well as those who have led excellent online master's programs but have been less successful in creating doctoral-level experiences in online environments. In this book, we build on existing literature on doctoral education, adult learning, and online education to present our model of a professional doctorate offered online.

Almost a decade ago, we set out to develop the online EdD degree in educational technology that is presently offered through the University of Florida's College of Education. The College of Education offers both a PhD and an EdD in the field of educational technology. The PhD (a research doctorate) is designed for individuals wishing to pursue research-oriented careers, while the EdD (a professional doctorate) is intended for those wishing to conduct research and assume leadership roles in professional environments. In short, the PhD program prepares "professional researchers," while the EdD program prepares "researching professionals" (Bourner et al., 2001, p. 71). Students enrolled in the PhD program are expected to study on campus—ideally, attending full-time and engaging fully with the campus community. We expect students pursuing our online EdD to continue working while taking courses, implementing their learning in their professional practice and engaging fully with the online academic community. Students in both programs are expected to produce work that is commensurate with doctoral-level standards and that advances the field and improves practice. We firmly

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subscribe to the view that the professional doctorate, while distinguished from the research doctorate by its purpose, can and should be as rigorous as the research doctorate.

Our goal was to create an online doctoral program that would enable candidates to build an online community of inquiry, to engage in critical discourse within a specific discipline and/or in an interdisciplinary setting, to learn from and with experts and peers, and to generate knowledge based on existing and original research. In this book, we present the model on which our program is based. Despite its origins in a specific doctoral program, the model necessarily addresses issues of concern to any online professional doctorate, such as curriculum design, the development of scholarly thinking, dissertation supervision in an online environment, and community building. Such topics are clearly integral to all doctoral programs aimed at learners who study part-time, are working professionals, and are unable to pursue on-campus studies. While we would never claim to have it all figured out or to have created a model that will work in every context, we believe that we have much to offer those interested in exploring online doctoral degrees, whether for professional researchers or researching professionals.

The University of Florida EdD in educational technology (UF EdD EdTech) has been offered since 2008 and has graduated fifty-six students at the time of writing. The degree comprises two years of online coursework culminating in qualifying exams and followed by the dissertation, during which students research a problem of practice, working one-on-one with faculty mentors. The program is characterized by asynchronous and synchronous online interactions, yearly on-campus meetings, and a strong focus on community building and the connections among theory, research, and practice. We have conducted a wealth of research about the program, which has contributed to the development of our model. Our published articles pertaining to specific topics are briefly summarized and cited in the individual chapters wherever relevant.

In this book, we share the theoretical and research foundations for our program, as well as its design, implementation, and evaluation. We discuss many of the key decision points, nuances, and potential pitfalls facing those designing and implementing online professional degrees. We share our insights from our own research and experience and from

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our colleagues; perhaps most importantly, we present data from students who have experienced our program. Although this book is largely based on our experiences in the field of educational technology, our work applies to a broad range of disciplines.

The book is divided into three parts. Part 1, which focuses on theoretical foundations and design, begins with a chapter in which we describe the need for researching professionals and online professional doctorates and present our model for a program that meets this need. Chapter 2 presents several adult learning theories and describes how they can be used to design an online professional doctoral curriculum that connects theory, research, and practice.

In part 2, we turn to the topic of implementation. Chapter 3 focuses on what we consider to be the most important and most challenging aspect of online professional doctorates—creating a community of researching professionals who are also scholars. In chapter 4, we describe ways to foster scholarly thinking among researching professionals with an online curriculum that promotes scholarly reading and writing, information literacy, and enculturation. Chapter 5 focuses on the structure and conceptualization of dissertations that connect theory, research, and practice, and chapter 6, which centres on the mentoring of such dissertations, is based on strategies used and data collected from three cohorts in our program.

Finally, part 3 focuses on evaluating an online professional doctorate. Chapter 7 addresses the maintenance and measurement of quality, and in chapter 8, we explore the definition and assessment of impact in an online professional doctorate. We conclude the book with a discussion of the numerous administrative issues, faculty decisions, and potential pitfalls we have experienced on our journey.

We provide details of theoretical frameworks and research where possible, but we also presume some basic familiarity with doctoral education practices and online teaching and learning. We cite seminal works on both doctoral and online education that readers can access for background information if needed. The increased expansion of online education in the last two decades has been accompanied by the development of standards, accreditation procedures, technical infrastructure, acceptable use policies, intellectual property policies, units that support online course development and online students, and faculty development programs

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in online teaching. Learning-management systems, student-information systems, synchronous and asynchronous communication technologies, and mobile applications for access to online program offerings have been implemented and studied at institutions of higher education around the world. Our knowledge base and ability to offer online programs has been enhanced by descriptions of implementations, research reports, and conference presentations on various aspects of online education in leading academic journals and professional organizations such as Educause, Contact North, and the Online Learning Consortium (formerly the Sloan-C Consortium). Seminal works such as *The Theory and Practice of Online Learning* (Anderson, 2008), *Handbook of Distance Education* (Moore, 2013), *Online Distance Education: Towards a Research Agenda* (Zawacki-Richter & Anderson, 2014), and *Distance Education: A Systems View of Online Learning* (Moore & Kearsley, 2012) provide a comprehensive overview of various aspects of online education.

We believe that this book can guide program leaders who aim to develop, implement, and sustain a rigorous online professional doctorate that provides excellent educational experiences for adult professionals who have different needs from those aiming to pursue careers in academia. It can also be useful to higher education professionals seeking to include e-learning components in existing on-campus doctoral programs and to expand existing programs for traditional students so as to include professional students at a distance. Educators interested in improving the quality of an online professional doctorate—from both a process perspective (how things are working) and a product perspective (how the doctorate is impacting students and their environments)—will also find this book valuable. Notwithstanding discipline-specific and institution-specific issues and areas for consideration that might arise in other programs, this book provides a comprehensive guide to the design, implementation, and evaluation of online professional doctorates.

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PART I

Theoretical Foundations and Design

1 The Case for an Online Professional Doctorate

The goal of most doctoral programs is to prepare students for research and teaching positions that will allow them to advance knowledge in their chosen disciplines. Ideally, students immerse themselves in the scholarship of their disciplines, acquire research skills, become active members of the academic community, complete comprehensive or qualifying exams, and conduct independent research that culminates in a dissertation. However, not all individuals who pursue a doctoral degree do so with the hope of working in a university- or research-based setting. Some are motivated to pursue doctoral degrees by the increasingly large and complex body of knowledge and expertise required in their field, aspirations for promotion or advancement, and/or an intense passion to make a difference in their local professional contexts. Traditional doctoral structures are often less than ideal for such individuals because their needs and goals differ from those associated with traditional academic and research environments.

The needs of professionals seeking terminal degrees that are not focused on academic or traditional research environments have been addressed in a variety of ways. The past decade has seen an increasing number of professional doctorates offered in the United States, the United Kingdom, and Australia, countries where higher education professionals and policy-makers have given greater attention to economic pressures, the need to implement research in the professions, and the drive to prepare a highly educated workforce (Kot & Hendel, 2012). In

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Canada, similar political, economic, and social factors have contributed to a renewed emphasis on the quality of PhD programs and to the creation of flexible PhD programs for adult professionals (Allen, Smyth, & Wahlstrom, 2002). These efforts address the rising need for highly skilled researchers and professionals outside of academia, aim for closer connections between research and practice or between research in academic and nonacademic professional contexts, and provide improved access to a terminal degree for adult professionals with commitments that might exclude them from full-time on-campus studies.

Developments in Internet and communication technologies in the last two decades have made possible virtual learning environments that facilitate doctoral-level experiences at a distance. However, the diversity of models for online doctorates, the research expectations and products, and the traditional view of what constitutes doctoral education have often led to such degrees being perceived as less rigorous, lower quality, and incapable of advancing knowledge. Nevertheless, excellent online doctoral programs (both professional doctorates and flexible PhDs) exist around the world that contribute to knowledge creation and that graduate professionals who conduct invaluable research in their professional contexts.

In this opening chapter, we provide some background about professional doctorates and present our model for an online professional doctorate that fuses theory, research, and practice. Using the example of the online professional doctorate in educational technology at the University of Florida (UF EdD EdTech), we explain why the online environment is an ideal medium in which to offer a professional doctorate. The chapter concludes with a list of key considerations for university program leaders wishing to distinguish between research and professional doctorates and to offer online professional doctorates.

A HISTORY OF THE PROFESSIONAL DOCTORATE IN THE UNITED STATES

The first doctor of pedagogy (later called doctor of education) was awarded in 1898 at the University of Toronto in Canada, and the first doctor of education, or EdD, in the United States was awarded in 1921 at Harvard University, sixty years after the first PhD was granted at Yale University (Allen et al., 2002; Lee, Brennan, & Green, 2009). Doctoral degrees in other disciplines, such as nursing, engineering science, and

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psychology, soon followed, the goal being to enable disciplines that could not offer a doctor of philosophy to award a degree comparable to the PhD. A report on doctorates earned in the United States in 1991 listed fifty different doctoral-level degrees in addition to the PhD, including several in very specialized fields such as rehabilitation and music ministry (Ries & Thurgood, 1993). These doctoral degrees varied in purpose and scope: some were research doctorates designed, like the PhD, to prepare recipients to teach at a postsecondary level, while others targeted people who planned to become practitioners in a particular discipline. Taking as his example the doctor of ministry, Tucker (2006) notes that, depending on the individual program, the same degree could amount to either a research doctorate or a professional doctorate.

This lack of standardization has been especially prevalent in relation to the EdD. The Survey of Earned Doctorates, sponsored by six federal agencies, reported that 143 participating doctor of education programs in the United States, after being reviewed over several years, were reclassified from research doctorate to professional doctorate during the 2010–11 period (National Science Foundation, National Center for Science and Engineering Statistics, 2015). Given the close relationship between practice and research in the field of education, the EdD was, in theory, intended to prepare educational practitioners to be educational leaders who conduct research in practice, whereas a PhD in education prepared students for academic careers in educational research. In reality, however, several institutions, including Harvard, offered EdDs that looked more like PhDs, while others offered both degrees. The EdD was often treated as a less rigorous degree, with some institutions offering the EdD as a practitioner degree with no research component. As a result, "instead of being valued for accomplishing the discrete ends it was originally designed for, the EdD is widely regarded as a 'Ph.D.-Lite'" (Shulman et al., 2006, p. 27). In 2006, on the basis of data collected from individuals involved in six different disciplines at fifteen institutions who had reconceptualized their doctoral programs, the Carnegie Initiative on the Doctorate emphasized the importance of clearly distinguishing between the research doctorate, which would prepare *stewards of a discipline*, and a professional practice doctorate, which would prepare *stewards of practice* (Perry & Imig, 2008; Shulman et al., 2006). Bourner et al. (2001) made a similar distinction between research and professional

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doctorates in universities in England using the terms *discipline-development* doctorates, whose holders seek to advance science and knowledge from a disciplinary standpoint, and *student-development* or *context-improvement* doctorates, whose holders seek to solve contextually based problems of practice through rigorous research.

Since 2007, to improve both programs, the Carnegie Project on the Education Doctorate (CPED) in the United States has addressed the lack of clarity in the content of EdD and PhD programs by engaging colleges and universities in distinguishing the goals and outcomes of these two programs. According to the current CPED definition, PhD programs prepare researchers for traditional faculty or research settings while EdD programs "prepares educators for the application of appropriate and specific practices, the generation of new knowledge, and for the stewardship of the profession" (http://www.cpedinitiative.org/page/AboutUs). During our program's inception, our faculty participated in CPED, and the vision of a professional practice doctorate equally rigorous to a Phd but distinct in purpose catalyzed our initial thinking about the UF EdD EdTech. Our model evolved based on numerous factors, including the online nature of our program, the interdisciplinary nature of the field of educational technology, the range of contexts within which our students work, and our familiarity with international perspectives on professional doctorates.

CHARACTERISTICS OF THE PROFESSIONAL DOCTORATE

The term *professional doctorate* does not have a standard definition and is often synonymously used in various disciplines with terms such as *practitioner doctorate*, *professional practice doctorate*, *the practice degree*, and *the clinical doctorate*. All of these terms clearly refer to a doctorate designed for those with significant work experience and those who are embedded in or want to apply the degree to practice. However, doctoral programs in different disciplines, as well as within the same discipline across institutions, have varying expectations and formats.

The problem with terminology is further complicated by the fact that internationally, the professional doctorate takes many forms in the English-speaking world. In various disciplines in the United States, a combination of coursework and research has been prevalent in doctoral education of all types since the 1920s. Similarly, in Canada, doctoral programs generally include coursework, a residency (with varying lengths and

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requirements for research versus professional doctorates), and research (Allen et. al., 2002). In the United Kingdom and Australia, however, the PhD often does not include a "taught component" (Bourner et al., 2001, p. 66). The United Kingdom first offered professional doctorates (e.g., the EdD) in the 1990s; these degrees often included coursework, which distinguished them from research doctorates. In Australia, the professional doctorate has been defined as "a program of research and advanced study which enables the candidate to make a significant contribution to knowledge and practice in their professional context" and possibly "more generally to scholarship within a discipline or field of study" (Council of Australian Deans and Directors of Graduate Studies, 2007, p. 1).

British and Australian researchers often refer to the professional doctorate as an "in-service doctorate" (as opposed to the "pre-service" or research doctorate) to indicate that the doctorate was designed for working professionals and not for young students fresh from bachelor's or master's degrees (Bourner et al., 2001, p. 66). For instance, Maxwell and Shanahan (1997) define the professional doctorate in Australia as "an in-service or professional development award, concerned with production of knowledge in the professions," distinguishing it from "the professional doctorate in the USA (with its history as a pre-service award)" (p. 133). In addition, Maxwell (2003) found that the connection to industry was definitive of several professional doctorates, which were characterized by the location of their research in industry, the inclusion of committee members from industry, or mentoring by members in industry. The workplace, and not the university, as the basis for research was also highlighted by Maxwell and Shanahan (1997) in their analysis of nineteen EdD programs in Australia; they asserted that professional doctorates produced "knowledge in context" rather than "propositional knowledge" (p. 142).

This distinction is noted by Gibbons, Limoges, Nowotny, Schwartzman, Scott, & Trow (1994), who propose that two modes of knowledge production exist: Mode 1, or disciplinary knowledge, which is generated in universities and is "governed by academic interests of specific communities," and Mode 2, or transdisciplinary knowledge, which is produced "in context of application" and is a result of "new forms of research practice carried out in places far from the university" (cited in Lee, Green, and Brennan, 2000, p. 124). Or, as Morley and Priest (1998)

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describe it, transdisciplinary knowledge contributes to the "development of professional practice, rather than to the advancement of purely theoretical knowledge" (p. 24). Based on the distinction between these two modes of knowledge production, Lee et al. (2000) propose a hybrid curriculum model for the professional doctorate that takes into account the intersections between the university and the organization in which a doctoral research project will typically be undertaken. This hybrid model would facilitate the development of not only new kinds of knowledge but also new ways of producing knowledge, ways that involve new relationships among participants and new kinds of research writing. Lee et al. (2000) propose "a three-way model, where the university, the candidate's profession and the particular work-site of the research meet in specific and local ways, in the context of a specific organization" and where the doctoral student will use "research literacies" to solve "problems of professional practice" (p. 127). Our proposed definition of the professional doctorate substantially corresponds to this point of view.

The Online Professional Doctorate for Researching Professionals

Following their review of doctoral programs at seventy British universities, Bourner et al. (2001) distinguished between the PhD as a degree "intended to develop professional researchers" and the professional doctorate as a degree "designed to develop researching professionals" (p. 71). We agree with this distinction and define researching professionals as individuals who conduct research that generates knowledge to improve (primarily) their professional contexts; their research combines foundational and theoretical knowledge in their disciplines (sometimes, in more than one discipline) with knowledge of research in their contexts. We contend, however, that a professional doctoral curriculum that is designed according to our model can also contribute to the advancement of theoretical and empirical knowledge within a discipline or across disciplines. We propose an online professional doctorate that

- combines online coursework with a dissertation;
- allows researching professionals to remain embedded in their professional contexts while engaging with an online academic community of inquiry;

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- fosters scholarly thinking in researching professionals;
- produces research grounded in a conceptual framework and culminating in a dissertation that addresses problems of practice but also has implications for other contexts; and
- generates researching professionals who can fuse theory, research, and practice and can communicate new knowledge and research in both professional and academic contexts.

An online professional doctorate with these characteristics contributes to effective application of research in professional contexts, productive collaborations between experts in professional and academic contexts, and a deeper understanding of research in professional contexts for those working in traditional academic contexts. This bidirectional flow of knowledge, expertise, and research can result in the advancement of various types of knowledge in both academic and professional contexts.

THEORY, RESEARCH, AND PRACTICE

Our model is based on the premise that the knowledge, research, and scholarship of students graduating with a professional doctorate should bring together the trifecta of theory, research, and practice (see figure 1).

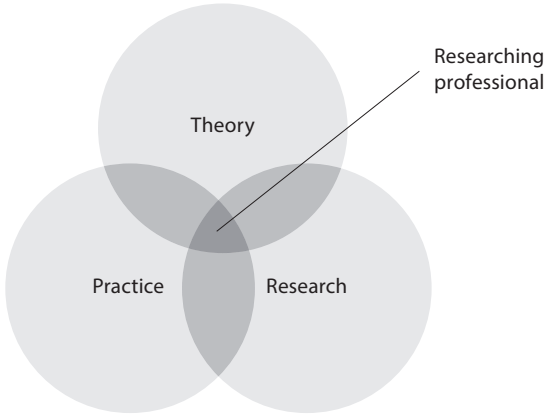

Figure 1. Trifecta of theory, research, and practice.

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- *Theory.* Researching professionals should possess foundational knowledge of theories in their discipline, and deep knowledge of theories that inform their areas of specialization within their discipline.
- *Research.* Researching professionals should possess foundational skills in research methods, deep knowledge of prior research and research methods in their areas of specialization, and knowledge of ethical behaviour and appropriate research methods in the context of their practice.
- *Practice.* Researching professionals should possess foundational knowledge of the social, political, historical, and economic fabric of their professional contexts; deep specialized knowledge of their professional contexts and disciplines; and a passion for improving their professional contexts through problem solving.

Researching professionals in a professional doctorate should be able to (a) construct their conceptual or theoretical frameworks that combine theories and prior research from one or more disciplines as they relate to problems of practice; (b) apply those theoretical frameworks using contextually appropriate research skills, to the implementation of research in their professional contexts; and (c) communicate the results and implications of their research to enhance context-specific knowledge and practice. In our model for the online professional doctorate, researching professionals are also enculturated into scholarly thinking in their disciplines, making it possible for them to disseminate knowledge and research produced in their professional contexts to other contexts. For example, in the UF EdD EdTech, dissertations produced by students within their professional contexts often lead to implications for other professional contexts and can sometimes contribute to the advancement of knowledge in a discipline. We assert that knowledge and research resulting from a true fusion of theory, research, and practice in an online professional doctorate are significant for both professional and academic contexts. Moreover, the online nature of the professional doctorate we describe in this book and the multiple opportunities for interactions and information dissemination provided by communication technologies today ensure the blurring of context boundaries and increased engagement among stakeholders from various contexts.

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THE NEED FOR ONLINE PROFESSIONAL DOCTORATES

Several institutions currently offer successful on-campus professional doctorates in which students take classes at university campuses in the evenings or on weekends and conduct research in their workplaces. Nevertheless, we assert that the online environment is an ideal medium for professionals who wish to immerse themselves in theory and conduct research while remaining embedded in their practice. We envision the online professional doctorate as particularly relevant for researching professionals who work in diverse professional contexts at a distance from the institution at which the terminal degree of their choice is offered. With today's Internet and communication technologies, faculty members at a university can interact using real-time video and audio with people situated at physical distances; professionals can access academic research and course materials while at their workplaces and homes or while travelling; and online communities can comprise participants located in different states, countries, and workplaces. It is not only possible but, in our opinion, preferable for a professional doctorate that combines theory, research, and practice to be offered using the online medium.

Those likely to apply to professional doctorates are typically older than traditional PhD students, are usually fully employed in professional settings, and often carry numerous personal responsibilities such as caring for children or aging parents. Online education allows such professionals to continue to work, whether full-time or part-time, and to meet the personal demands on their time while simultaneously learning in an environment that promotes the integration of university learning and professional practice. During interviews with nineteen students who graduated from the first two cohorts of the UF EdD EdTech, seventeen stated that they could not have received their doctoral degrees if not for the online medium. The reasons they provided included family responsibilities, work commitments, inability to coordinate class schedules with professional commitments, and geographical distance from a research university. Sixteen students stated that the support of their online cohorts was instrumental in their ability to persist and finish their dissertations. The online environment enables students to build a community with other students working in other professional contexts, thus avoiding the isolation that many working doctoral students feel in traditional, campus-based programs.

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In our educational technology program, we do not see the PhD and EdD degrees as mutually exclusive but as having different purposes, goals, and outcomes: the PhD prepares professional researchers for academic and other contexts and the EdD prepares researching professionals for the interdisciplinary field of educational technology. With these distinctions in mind, we spent considerable thought and effort on the admissions process, attempting to identify the goals of prospective students. Of the 117 applicants to our first two cohorts (approximately 50% of the applications received) who completed a voluntary, anonymous survey about the reasons for their application to our university, 115 were employed full-time. About 90 percent of those who responded to the survey stated that they were applying to our program because it was offered online, and 60 percent named convenience as a reason. Professional development (82%), professional growth (76%), and enhanced professional status (61%) were the most cited reasons for pursuing a doctoral degree. These data clearly indicate the relevance of an online terminal degree to working adults who cannot attend a university full-time but would like to learn and grow in the context of their professions. Of the 117 survey respondents, only 11 percent had not previously taken an online course, whereas 51 percent had taken at least six courses online before applying to our program. While we acknowledge the fact that the respondents were interested in or were already working in the field of educational technology, these numbers not only reflect the general trend toward online education in institutions of higher education (Seaman, Allen, & Seaman, 2018), but they also emphasize the need for online terminal degrees for professionals.

The Need for Researching Professionals

Traditionally, a doctoral education aims to prepare researchers who will engage in the pursuit and advancement of knowledge in higher education settings. In the past couple of decades, the number of academic jobs available to doctoral graduates has decreased (Golde & Walker, 2006; Nyquist, 2002), and at the same time, the access for adult professionals interested in pursuing terminal degrees part-time in institutions of higher education has increased because of advancements in Internet and communication technologies. These developments have been accompanied

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by calls for improving the quality of doctoral education and fulfilling the need for highly educated professionals and skilled researchers in areas outside of academia (Archbald, 2011; Burgess, Weller, & Wellington, 2013; Golde & Walker, 2006; Nyquist, 2002). Reports have criticized the isolation of academic research from industry and the economic needs of a society or country and, at the same time, have highlighted the need for researchers and professionals with terminal degrees who can advance knowledge in professional contexts, policy making and government, social and economic organizations, and corporate environments (Canadian Association for Graduate Studies, 2005; Woodrow Wilson National Fellowship Foundation, 2005).

In a report about innovations in doctoral education, the Woodrow Wilson National Fellowship Foundation (2005) specifies new paradigms, new practices, new people, and new partnerships as the four themes that should inform doctoral education of the future. At the heart of this report is the need for making research the focus of doctoral education and for making "the application of knowledge beyond the academy integral to a doctoral experience" (p. 3). Although the report does not mention professional doctorates, we contend that these degrees—if they integrate the trifecta of theory, research, and practice—are ideally suited to generating knowledge applicable outside of the academy. Within our framework, professional doctoral research is rigorous but has a different purpose from the research conducted in a traditional research doctorate: our framework supports the creation of knowledge in context (Maxwell & Shanahan, 1997), application of that knowledge to professional contexts, and advancement of the discipline through that application. A researching professional's knowledge and the intersection of theory, research, and practice may fall within a discipline but are often interdisciplinary because professional contexts frequently operate in a transdisciplinary manner. There is a great need for individuals who are qualified to generate such knowledge to solve increasingly broad and complex problems in a variety of professional environments and to disseminate that knowledge in multiple environments. In the following section, we provide the example of educational technology as a field that is experiencing a great demand for researching professionals and online professional doctorates, and we briefly describe how theory, research, and practice coalesce in the UF EdD EdTech.

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AN ONLINE PROFESSIONAL DOCTORATE IN EDUCATIONAL TECHNOLOGY

Educational technology is a field with a long history of practice-focused domains and research-oriented paradigms (Reiser, 2001). A widely accepted definition of educational technology that clearly brings research and practice together is "the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Januszewski & Molenda, 2008, p. 1).

Notwithstanding research-oriented positions that are important for the field of educational technology, opportunities for researching professionals are expanding rapidly around the world in contexts such as schools, virtual schools, businesses, industry, the military, postsecondary institutions, and nonprofit organizations. The need for researching professionals in these contexts is burgeoning as the knowledge base is exploding, access to digital data is growing exponentially, and critical analysis is increasingly necessary while employing technologies to facilitate learning and performance. In particular, educational technologists are needed to support the rapid expansion of online and mobile learning in schools and higher education contexts and of technology use in all disciplines. Twenty-seven states in the United States have K-12 virtual schools, and several million students currently take K-12 online courses (Watson, Murin, Vashaw, Gemin, & Rapp, 2012). Similarly, almost one-third (31.6%) of US college students are taking at least one online course (Seaman, et al., 2018), and more than 62 percent of colleges and universities offer online degree programs (Allen & Seaman, 2013). Massive open online course (MOOC) offerings are increasing across postsecondary institutions, and the use of open educational resources (OER) across interdisciplinary contexts is also expanding (Allen & Seaman, 2016).

These new online opportunities create the need for highly skilled educational technologists who can lead instructional designers or educational technology specialists; can study the wealth of data generated about the activities, patterns, and performance of students and faculty in digital educational experiences; and can solve a variety of contextually based problems that accompany technology implementation. The need for educational technologists and educators in all disciplines who are well versed in designing instruction and assessments, conducting

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research, and making data-driven decisions in digital environments is at an all-time high. This need has been exacerbated by the development of several new online certificates, master's programs, and terminal degrees in disciplines such as educational technology, learning design, and the learning sciences—programs that are targeted at adult professionals across disciplines who would prefer to learn at a distance for various reasons. In the UF EdD EdTech, for instance, we have enrolled doctoral students from different professional environments (e.g., postsecondary, traditional and virtual K-12, corporate, military, and nonprofit), job roles (e.g., teachers from elementary, middle, and high school; college instructors; instructional designers and distance learning professionals; administrators; higher education advising professionals; faculty development and professional development professionals), and disciplines (e.g. math, science, foreign languages, English, nursing, public health, deaf studies, art).

Our curriculum, which combines online coursework with a dissertation, was purposefully designed to address the needs of professionals who seek to conduct research that furthers knowledge in their disciplines while remaining embedded in their professional contexts. The initial two years of coursework immerse the students in the foundational knowledge of their disciplines and the discipline of educational technology and in specialized knowledge of research and research methods in their areas of specialization, which are usually interdisciplinary. They are encouraged to apply the knowledge gained from their coursework to problems of practice at their workplaces and to share and disseminate their learning from these experiences in both professional and academic communities. They are required to develop conceptual frameworks that fuse theory, research, and their deep knowledge of their professional contexts and that form the basis of their research throughout the program and in the culminating dissertation. Below, we describe how three researching professionals—a health science librarian, a professor of nursing, and a high school principal—combined theory, research, and practice in the UF EdD EdTech and generated new knowledge that was shared in academic and professional contexts.

A health sciences librarian in our program was researching ways to support health care professionals taking graduate courses in successfully accessing and using digital library resources. For her research, she

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drew on theories of online learning (Moore, 1993) and principles of instructional design (Morrison, Kemp, & Ross, 2003); prior research in information literacy and library instruction; and her professional experience in the field of health sciences, where she piloted and evaluated an embedded librarian project. Her research combined methods used in online learning and in the library sciences, and she analyzed returned questionnaires and online interactions to identify the effectiveness of online embedded librarians in information-literacy instruction specific to the health sciences. Finally, she integrated into her professional context—a college of public health—the implications from her results for instructional design, curriculum, and online student-librarian interactions. At the time of writing, she continues to conduct and publish interdisciplinary research in educational technology, information literacy, and the health sciences. Based on her dissertation research, Educational Technology faculty began to work with embedded librarians, and a professional in a subsequent cohort implemented a project that explored the feasibility of embedding librarians in the field of English education.

Another student in our program, a professor of nursing, was interested in developing geriatric and long-term caring efficacy among nursing students. She explored the use of digital storytelling and reflective learning in higher education and the literature on caring and caring efficacy and, based on Kolb's (1984) experiential learning theory and a care framework used currently in the United States, created a conceptual framework specific to her context. She designed and implemented a digital storytelling activity in the nursing curriculum and investigated the impact of that activity on nursing students' self-efficacy based on artifact analysis and a caring efficacy scale. To address a problem of practice, this researching professional combined knowledge of foundational theories and prior research in nursing, educational technology, and curriculum design in nursing education; knowledge of research methods and instruments used in higher education, educational technology, and current nursing practice; and intricate knowledge of both her professional context and the discipline. Her dissertation contributed both to her immediate context and to the development of a care-efficacy framework in a professional nursing organization.

A third graduate of our program, a high school principal in a country where technology integration in schools is not commonplace, was

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working in a secondary school where mathematics scores were below those in other content areas. He examined the effects of GeoGebra, a dynamic geometry software (DGS) program, on student engagement and student achievement in four Grade 9 geometry classes using experimental and control groups. He combined foundational and specialized knowledge of theory and research in educational technology and mathematics to study how DGS might support factors known to contribute to mathematical learning, including visual and tactile opportunities to represent abstract concepts and the need for immediate feedback. With a mixed-methods approach, he used a student-engagement scale to measure engagement, evaluated student achievement using a pre- and post-test and the students' semester math grades, and conducted interviews of teachers in the four classes, along with classroom observation. Although the statistical results showed no significant difference in achievement or engagement, the qualitative data provided rich insight into teaching and learning mathematics with technology in his professional context. Based on this student's dissertation, a proposal for infusing GeoGebra more seamlessly into geometry classes and providing more support to teachers was developed. This researching professional is also sharing what he learned with others in his country and identifying issues related to technical infrastructure that need to be addressed in his school.

The above examples show that researching professionals in an online professional doctorate can blend foundational and specialized interdisciplinary knowledge to conduct research that addresses problems of practice. Such endeavours not only generate new knowledge in professional contexts but also result in knowledge and expertise being transferred from specific contexts to larger professional communities and to other contexts or disciplines, in the formation of new partnerships, and in the sharing of expertise between academic and professional contexts.

KEY CONSIDERATIONS

We recognize that some disciplines may experience a greater demand for researching professionals and online professional doctorates than others and that our experiences in doctoral programs in education may be different from those of educators in other disciplines. Like our discipline of

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educational technology, which has a tremendous need and great potential for terminal degree programs for researching professionals, other disciplines have a similar number of professionals who are interested in rigorous research, as evidenced by the literature we reviewed in this chapter. We provide key considerations here for those interested in offering an online professional doctorate for researching professionals.

Defining the purpose and goals. Those interested in offering an online professional doctorate should first clearly articulate its purpose and goals based on their institution's goals and the needs of their discipline and profession. We have found this to be essential for making a case for a particular online professional doctorate, designing the program's curriculum, initiating conversations with administrators and colleagues, marketing the program to prospective students, and recruiting students who will be served well by the degree. The definition of purpose and goals should be based on the types of skills and knowledge needed by the researching professionals for whom the program is designed and on the connections among theory, research, and practice that are valued in the particular discipline. A review of the dissertations that already exist in the discipline and a definition of the dissertation format and types of research that would be valuable can help to refine the proposed program's purpose and goals.

Identifying prospective learners. Identifying the learners who would be interested in earning a professional doctorate in the discipline in question, as well as the kinds of dissertations or research that would enhance their professional environments, can increase the sustainability of a professional doctorate. In order to identify who might be interested in a doctorate like the one we envisioned and to design a relevant and useful curriculum, we initially surveyed potential applicants. We also collected data from applicants about their prior experiences with online learning in order to provide the support they would require as doctoral learners in the online environment. Finally, to continually improve the program and ensure that it meets the needs of professionals and keeps up with the changes in our dynamic field, our ongoing practice is to solicit feedback from each cohort, regularly review reports about key positions in our profession, and conduct research about the skills and knowledge needed in the profession (Ritzhaupt & Kumar, 2015).

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Identifying existing and needed resources. As important as it is to understand the needs of professionals and their experiences as online learners, an analysis of the infrastructure and capabilities of the host institution to offer an online degree and support adult learners at a distance is essential for retention and student success. For example, an institution that already offers master's degrees or certificates online will typically have a learning management system and instructional designers, as well as some experience with online student support and the marketing of online offerings. In the case of the UF EdD EdTech, because of our previous experience of conceptualizing and offering a successful online master's program, we were familiar with the processes and infrastructure needed to begin an online doctoral program. At the same time, we were challenged with providing research infrastructure for online students and addressing the requirements of an online doctorate that were unrelated to coursework (e.g., proposal defence meetings or dissertation defence meetings). It is important to identify what already exists and what will be needed to successfully offer an online professional doctorate.

Involving stakeholders. Administrative support is essential to any new initiative in an institution of higher education, as is compliance with accreditation and policy procedures. It is critical to collaborate with staff involved with admissions, administrative procedures, and graduate student support. Additionally, all faculty members involved in an online professional doctorate must understand its purposes and goals, the challenges and needs of professionals completing an online degree, and the competencies required to communicate with and mentor students online. Faculty readiness to teach online, a plan for quality assurance and maintenance, and ongoing documentation of how the online professional doctorate is achieving its goals are also required for the successful implementation of such a program.

CONCLUSION

Higher education institutions have responded to the need for professionals with advanced degrees and specialized knowledge in a knowledge-based economy by adapting or creating doctoral programs for adults who seek to acquire a terminal degree while embedded in their professional contexts. Advances in Internet and communication technologies have

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already made it possible for such programs to be offered at a distance. The ubiquity of mobile technologies and the advent of augmented reality hold tremendous potential for new modes of interaction, different types of degree programs, and creative models of doctoral education in the future. Notwithstanding the technologies used, clarity of purpose and the purposeful design of a curriculum that integrates theory, research, and practice is needed for an online professional doctorate to succeed in its goals.

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2 Designing the Curriculum

Since the advent of the Internet, distance education has been known by terms such as *Web-based learning*, *computer-assisted learning*, *e-learning*, *virtual learning*, and *online learning*. All of these terms presume both a spatial distance between the learner and the teacher and the need for sound instructional design that allows the teacher to communicate what the learners need. Emphasizing the importance of the transaction between the teacher and the learner, Moore (1993) defines distance education as "the universe of teacher-learner relationships that exist when learners and instructors are separated by space and/or by time" (p. 22). He argues that thoughtful and effective pedagogy can bridge the transactional distance between the teacher and the learner, making spatial difference irrelevant. For the sake of simplicity, we use the term *online education* in this book to refer to the general phenomenon and the terms *online program*, *online courses*, or *online learning* to refer to the process and its components. Online learning can be defined as "the use of the Internet to access learning materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience" (Ally, 2008, p. 17).

To what extent students use the Internet as a medium for interactions during a professional doctorate is in large part an institutional decision. Several institutions of higher education offer programs that are completely online and do not require any on-campus experiences. Others, like the professional doctorate at the University of Florida that forms the

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basis for our experiences and research, are offered largely online with required on-campus sessions of varying duration. Some institutions have attempted to use a blended model, enabling students to videoconference into live doctoral classes and seminars and thus take classes with on-campus doctoral students (Henriksen, Mishra, Greenhow, Cain, & Roseth, 2014). In this book, we describe the design, implementation, and evaluation of a program that is offered almost completely online, and we refer to it as an *online program*; however, the content of this book is equally applicable to those attempting to combine online learning with on-campus experiences for professional doctoral students because the theory, models, and examples apply to either configuration.

The rapid development of Internet and communication technologies in the past two decades has led to an increased number of institutions offering courses and degrees completely online and acknowledging online education as a component of their institutional strategies (Allen & Seaman, 2013). In addition to affording learners flexibility in terms of place, time zone, and access, online education enables them to interact with knowledgeable others, whether peers, instructors, or experts. However, learners' interactions with learning materials, peers, and experts, if they are to be effective, must be carefully designed, taking into account educational learning theories, prior research, and learner needs. In the case of online professional doctorates in which (a) the learners are professionals with diverse backgrounds, experience, and working environments and (b) the learning goal is to develop research competence and scholarly thinking so that professionals can apply theory and research to practice, learning experiences must be designed with the needs, prior experiences, and professional contexts of these learners in mind.

In our model, we propose that theory, research, and practice be integrated at all stages of the online professional doctorate, with researching professionals constructing conceptual or theoretical frameworks, using contextually appropriate research skills, and communicating the implications of their findings in order to further context-specific knowledge. This chapter provides an overview of theories and research that can inform the conceptualization of curriculum that achieves the above in an online professional doctorate. We begin with a brief introduction to adult learning theory, transformative learning theory, and situated learning, and we discuss the implications of these theories for designing learning

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experiences for students in professional doctorates. Drawing from these theories, we then illustrate ways to connect theory, research, and practice to form the foundation for professional doctorates, using examples from the curriculum of the EdD in educational technology at the University of Florida (UF EdD EdTech).

LEARNING THEORIES AND PROFESSIONAL DOCTORATE CURRICULUM

Online graduate programs are traditionally about access and equity for nontraditional populations, although they also provide on-campus students with additional course options. Professional doctorates attract professionals of varying ages and years of work experience, making it necessary to understand how adults learn in order to design effective learning experiences for them. In many cases, professional doctorates attempt to connect theory and practice; facilitate the implementation of research in practice; and facilitate change in practitioners' professional approaches, behaviours, and actions. Knowles's (1980) adult learning theory of andragogy, Mezirow's (1990) transformative learning theory, and Lave and Wenger's (1991) work on situated learning provide, in combination, a robust framework for the design of learning experiences for adults.

Andragogy

Knowles (1973) argues that teaching adult learners requires additional strategies to those commonly used in pedagogy, which he asserts is essentially grounded in the art and science of teaching children. To this effect, he developed the model of andragogy, which includes four "crucial assumptions" (Knowles, 1980, p. 45): (a) adults are self-directed, (b) their prior experiences play a role in their learning, (c) their readiness to learn depends on the relevance of content, and (d) immediacy of application and performance-centredness influence their motivation to learn. Knowles (1984) later added two assumptions to this model: (e) internal motivation characterizes adult learning, and (f) the need to know, or the value of what is taught, is important for adults.

These six assumptions suggest a learning environment where adults are participants in decisions about what they will learn based on their needs and goals and on how they understand the gap between their current state of knowledge and where they want to be. The role of the

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teacher and teaching environment in this model is to facilitate learning that will help students meet and assess their progress toward their educational goals. Knowles's (1980) description of the role of the instructor as a catalyst and guide—a "procedural technician, resource person, and coinquirer" (p. 49)—is particularly relevant to the roles of adviser and mentor in a doctoral program. Professionals who pursue higher academic degrees usually have professional goals and/or personal fulfillment in mind. The instructional design of a professional doctorate must consider these interests, scaffold the formulation of goals that are relevant to the professional and aligned with the doctorate, and foster a "process of self-evaluation" and "rediagnosis of learning needs" (Knowles, 1980, p. 49) throughout the student's movement through the program. Knowles (1980) goes so far as to suggest that "the most appropriate starting point for every learning experience is the problems and concerns that the adults have on their minds as they enter" (p. 54).

In this regard, identifying problems of practice in their work environment during the first semester of a doctoral program, as we do in the UF EdD EdTech, provides a relevant foundation for the students' research throughout a professional doctorate. Drawing on their professional experience helps students to stay engaged and self-directed, and identifying a problem clarifies their need for knowledge that will resolve the problem. They are thus motivated to explore theory and prior research and to conduct research related to the problem, since they are able to immediately apply what they learn to their work. Based on the knowledge they gain and apply, they may identify new problems of practice as they move through the professional doctorate. Using a problem of practice as a starting point in their studies ensures that exploration and application of theory and research have a self-directed purpose for professionals and improves their professional practice.

Transformative Learning Theory

Transformative learning theory is based on the idea of perspective transformation, which is defined by Mezirow (1990) as "the process of becoming critically aware of how and why our presuppositions have come to constrain the way we perceive, understand, and feel about our world; of reformulating these assumptions to permit a more inclusive, discriminating, permeable, and integrative perspective; and of making

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decisions or otherwise acting on these new understandings" (p. 14). This process, according to Mezirow, is triggered by a disorienting dilemma that is followed by self-examination and critical reflection. He categorizes three types of reflection that contribute to perspective transformation: reflection on the content learned, on the process of learning or unlearning, and on the premises held by learners. Along with critical reflection or self-reflection on assumptions, critical discourse is essential for exposing learners to new and disorienting information (Mezirow, 2006). The reflection phase is followed by the learner making new plans of action, building self-confidence, and eventually reaching a comfort level with new roles and ways of thinking (Mezirow, 1998). In the case of online professional doctorates, professionals often enroll because they want to acquire new knowledge or ways of thinking, although some may enroll because they need the additional qualification. When confronted with information that contradicts previous knowledge or beliefs, some professionals may become defensive and cling to old ways of thinking or acting, but the purposeful design of educational experiences that include reflection and discourse can facilitate changes in their perspectives—that is, in their beliefs, attitudes, and behaviour (Mezirow, 1998).

A common example of transformative learning in the UF EdD EdTech involves the way students' thinking about technology adoption and use change over time. Most students enroll in programs about educational technology because they support the use of technology in learning. Most assume that their job is to propagate and facilitate technology adoption and use within their contexts. However, during the program, they are exposed to critical readings about the role of technology in learning, the unintended consequences of technology use, and pro-innovation bias. Gradually, students become more critical about technology adoption and use in their contexts and seek research support for initiatives they lead (Kumar & Dawson, 2014). A student in the UF EdD EdTech elaborated on this during a focus group discussion:

> Usually, we don't rely on research much at all. It's very much, oh, that's cool, let's do that or try that. And really going through this process and reading and learning a whole lot more about the theories and the reasons why education is done a certain way really makes me stop and think first before I implement something, and I try to figure out why are we implementing it, what does the research say and what is this actually doing? (June, 2011)

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According to Patricia Cranton (Kelly, 2010), "transformative learning can be promoted by using any strategy, activity, or resource that presents students with an alternative point of view. Readings from different perspectives, field experiences, videos, role plays, simulations, and asking challenging questions all have the potential to lead to transformative learning." In a professional doctorate, different perspectives come not only from faculty and existing literature but also from peers in the doctoral program, experts in the discipline, and colleagues in professional practice. A curriculum that requires engagement and discourse with multiple stakeholders about existing research and theory can expose professionals to new information and other ways of thinking that they may not have encountered before. Not all of the new information that professionals encounter in doctoral programs, however, is disorienting or even relevant to them. Sometimes, the information may not be interesting at all, in which case they may not perceive the need for the information and may not be motivated to engage with it. Superficial engagement with new information can lead to assimilation of that information but not necessarily to change in existing conceptions (Dole & Sinatra, 1998). Thus, curriculum in a professional doctorate must be designed so that professionals engage deeply with multiple perspectives and participate in deep processing, critical reflection, and metacognition. We perceive transformation in a professional doctorate to be an evolutionary process that involves changes to prior knowledge and behaviours based on new conceptions and on exposure to theory, research, and multiple perspectives from peers and experts. In this regard, it is crucial that students immerse themselves in existing theories and research related to their problems of practice and conduct small research projects that facilitate contact with authentic data and stakeholders in their practice. According to another UF EdD EdTech student who participated in the focus group mentioned above,

> I think that the big thing is really, before [entering the doctorate], I think the tendency was just, yeah, that sounds like a good idea, let's do this, and now it's more—let's stop and look [at] why do we want to do this. How have other people done this? How successful have they been? What issue might come up if we try to do this or try to do that? And then, you know, once you actually implement something, whether it's an approach or program or whatever, then

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> there is a need also to go back and look at it and assess it. Did it make a change? You know, what did you learn? Were there things that went wrong? So, you know, not only looking at why do we want to do this, but now that we've done it how did it work, knowing how to assess it, and you know, reflecting on that. (June, 2011)

More recently, "a transformed way of understanding, or interpreting, or viewing something" (Meyer & Land, 2003, p. 4) has been termed a "threshold crossing." A threshold crossing leads to a changed outlook on a discipline or a change in personal identity, but it is also integrative because learners connect previously unconnected issues to discover their "hidden interrelatedness" (pp. 4–5). Exposure to knowledge from a different area of discourse that contradicts existing knowledge and beliefs or to knowledge that is incoherent or incomplete can be troublesome for learners. In the case of professional doctorates, students begin their doctoral journeys with existing knowledge and beliefs grounded in practice and with prior academic experiences that may or may not have included research. Activities that force them to re-examine their practice through the lens of theory and existing research can lead them to new insights. Transformation has been described as a journey through preliminal, liminal, and postliminal stages, in which the "state of liminality" (p. 10) constitutes the learner's struggle to integrate new knowledge or feel a loss of authenticity in their understanding before they can cross the threshold to reach a new understanding or let go of an old understanding. Transformation is a recursive process in a doctoral program because students continually confront new information, engage with it, and either assimilate it into their thinking or reject it. It is important to document transformation in a professional doctorate to ensure that the goals of the program are being fulfilled. For example, in the UF EdD EdTech, we attempt to identify how students have changed their approaches to professional initiatives at different stages of the program as a result of activities that connect theory, research, and practice and facilitate implementation and reflection (Kumar, 2014a).

Situated Learning

Online programs make it possible for students to continue working in their professional contexts or disciplines while pursuing areas of specialization related to their disciplines under the guidance of a

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faculty adviser or mentor. Embeddedness in authentic contexts presents professionals with unique opportunities to connect and apply their learning to their practice, which is a tenet of situated learning (Wenger, 1998). The online environment also enables those enrolled to engage in dialogue with others in their disciplines and in similar contexts around the world.

Within each discipline, learning is defined and bound by that discipline's language, epistemology, and context (Bransford, Brown, & Cocking, 1999). According to Lave and Wenger (1991), participants in any community that is related to a discipline, profession, or topic of interest move from being beginners, or from being at the periphery of a discipline or community, to being experts, or integral parts of the community. In a professional doctorate, such learning or acquisition of expertise involves enculturation into the scholarship of a discipline and the acquisition of habits of mind specific to the discipline or research (Walker, Golde, Jones, Bueschel, & Hutchings, 2008). We agree with Lave and Wenger's (1991) description of situated learning and communities of practice as unintentional and organic, but we posit that in a professional doctorate, it is possible to design environments that will foster a community of researching professionals and that in an *online* professional doctorate, the online environment can be powerful in facilitating discourse and reflection connected to participants' practice. In the UF EdD EdTech, we have found that participation in a community can contribute both to the development of researching professionals and to their approaches to their professional environments, but we have also learned that the formation of that community will depend on the participation of the learners and on learning presence, which we discuss in chapter 3 (Kenney, Kumar, & Hart, 2013).

An example of a design consideration related to situated learning is our use of a cohort model, in which students belonging to a particular cohort begin our professional doctorate program at the same time and take required courses together over a specified period of time. This cohort model, in combination with strategies for building an online community, has helped form a community of researching professionals in the UF EdD EdTech. Students in each cohort have in common their involvement in the discipline of educational technology, which they practice or are hoping to practice, and their membership in a doctoral cohort

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(Kenney et. al., 2013). Therefore, they have a shared identity that gives them a sense of belonging, the common goals of engaging in research and completing their doctorates, and enculturation in the educational technology field. Data from our second cohort revealed that this shared purpose forms the foundation for interactions that lead to the formation of community; helps professionals share information, knowledge, concerns, and anxieties; and assists with solving problems together and supporting each other through the doctorate (Kenney et al., 2013). The UF EdD EdTech is designed to include multiple spaces for instructor- and student-led interactions, where professionals share their problems of practice, receive formative feedback from faculty and peers as they progress in their initial explorations of theory and research, build trust, apply new knowledge to their practice, and reflect on the results of applications individually and with peers.

The learning theories reviewed above can provide a conceptual basis for an online professional doctorate curriculum and can inform how it is designed to develop researching professionals who merge theory, research, and practice. In the following section, we illustrate how to operationalize such a curriculum by describing selected core courses during the first year of the UF EdD EdTech.

Connecting Theory, Research, and Practice in the UF EdD EdTech

In our program, students are expected to conduct research related to problems of practice in their professional contexts, in the process acquiring and applying foundational knowledge in educational technology and deep knowledge in an area of specialization. During the first two years, students, as a cohort, take required coursework as well as electives. They take their qualifying exams at the end of their second year and then work on their dissertations. Given the emphasis on solutions to real-world problems, students are encouraged to approach empirical research from a pragmatic perspective, using thought as an instrument for prediction and action (Kumar & Antonenko, 2014).

Professionals enter the UF EdD EdTech with substantial experiential knowledge in various disciplines, including education and educational technology, and with a passion for growth and a desire to improve

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professional practice. Drawing on their prior knowledge and aiming to foster systematic reflection on this knowledge, we use the learning theories presented above to design online coursework connecting theory, research, and practice. The first semester in the UF EdD EdTech is guided by two goals: (a) to help students identify one or two problems of practice that will act as a catalyst for their doctoral studies and (b) to acquaint students with foundational theories in educational technology. We designed two complementary courses to support these goals.

The first online course is a doctoral colloquium to help students define one or more problems of practice in preparation for their doctoral journeys. Based on specific questions, students identify one or two problems of practice that they consider most significant and that, if addressed, would influence their professional environments. They then explore existing research by reviewing related peer-reviewed articles, determining how others have studied and addressed the problem, and considering the theories and methodologies that inform research about the problem. After evaluating their findings, students may redefine their problems of practice or identify strategies for further exploration. While students continue to refine (and often change) their foci throughout the program, this experience gives them a foundation in an area connected to their professional needs as well as a process for synthesizing and evaluating empirical research, a skill that will develop during their second semester in the program.

Simultaneously, students reflect on their professional journeys and goals for the next five years by developing a teliography, or a future fictional autobiography. Then, they tentatively plan relevant scholarly activities to help them achieve their goals. At every stage of the course, students receive feedback not only from the instructor but also from their peers. Groups of peers working in similar professional environments are formed so that students can discuss their problems of practice and their research with others who are likely to have experiences with and interests in their professional contexts or research topics. For example, one such group comprised five professionals engaged in distance learning, faculty development, and instructional design in three community colleges, a large public university, and a for-profit organization.

The other course in the first semester, Foundations of Educational Technology, aims to initiate the first stages of perspective transformation

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(Mezirow, 1990). This course begins with a focus on the history of educational technology. Because most students have only viewed the field through the limited lenses of their professional contexts, they are typically both surprised and overwhelmed by the breadth of the field and its long history of development. Often, this wider perspective leads them to reconsider how they are defining the problems of practice identified in the colloquium course. Next, students are guided to compare and contrast major paradigms, theories, and perspectives in educational technology and to determine how these have influenced their practice. Most students have never thought about the philosophical and psychological world views behind their professional beliefs, nor have they considered the theories that guide their practice. This content further transforms their thinking and makes some students feel uncomfortable, especially when they recognize disconnects between their beliefs and their practice or between their personal world views and those of their colleagues, supervisors, or larger professional contexts. Students are also scaffolded to consider what constitutes socially responsible research in educational technology (Reeves, 2000). For many, this is the first time they have considered the social ramifications of research design, implementation, and application. In many ways, this content serves as a bridge between the first semester, when students gather empirical research about problems of practice and learn how that research fits within larger paradigms, theories, and perspectives in the field, and the second semester, when they delve more deeply into educational technology research.

The second semester begins with the course Issues and Trends in Educational Technology Research, which familiarizes students with common conceptual frameworks and existing methodological approaches in the discipline of educational technology. By analyzing empirical studies and comparing claims and evidence, students learn to critique the alignment of research questions, theories, and methods in educational technology research. Students then assemble rubrics to examine the quality and rigour in qualitative, quantitative, and mixed-methods research and articulate their emerging understanding of these methodological paradigms. Finally, students make their first attempt at devising a conceptual framework for their identified problem of practice and link the framework to appropriate data-collection and data-analysis methods. The development of scholarly thinking, which

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includes approaching existing research critically, is based on all three learning theories we described above: students encounter new knowledge and ways of thinking, collaboratively represent and evaluate their understanding in the rubrics they create and use, and apply the theory and research to their professional practice.

During the second semester, students also take their first required course in qualitative research, where they learn about different qualitative approaches and conduct small-scale qualitative research projects to investigate the problem of practice they have identified. Students may not yet have enough methodological knowledge to select a methodology for a robust study, but they are guided to focus on a question that they can explore using a basic qualitative analysis. This exercise provides them with their first opportunity to collect and analyze data related to their practices. It also allows them to talk to stakeholders related to their research interests and to gain exposure to research-participant perspectives; this often provides them with a different lens through which to view their research. For example, for her qualitative research project, a student who was a college instructor investigated how instructors were adapting to online teaching and which tools or strategies they used. Her interview results revealed that the instructors in her context were enthusiastic about integrating new technologies and did not struggle as much with online teaching as with the confusion and frustration of multiple technology initiatives being implemented each year at their institution. After reflecting on her project and rethinking her premises about the context and research problem, she decided to focus on the implementation of technology initiatives at institutions of higher education.

The first year ends with the course Doctoral Seminar in Educational Technology, in which students conduct a review of literature related to their problem of practice; the review includes literature not only in educational technology but also in the discipline in which they work or disciplines related to their problem of practice. Midway through the course, students create a visual representation of their emerging understanding of the theories, prior research, and methodological approaches related to their problem of practice, on which faculty and peers share formative feedback. One goal of the course is for students to assemble a conceptual framework that will visually represent salient literature that will fold into their dissertations and inform their research questions and

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methodological choices. A second goal is the writing of a literature review that includes the management of bibliographic resources and appropriate citations of research. Students use the book *Six Steps to Writing a Literature Review* (Machi & McEvoy, 2009) to help with the process. However, the final product is not a literature review in the traditional sense but a critical review of interdisciplinary theory, research, and methods that inform their problem of practice. In this course, students learn to take responsibility for synthesizing research, reviewing each other's literature reviews, providing feedback on ideas and writing within small groups, and integrating that feedback into their work. Students who went through the first offering of the UF EdD EdTech later reported that they had struggled with writing a dissertation proposal and integrating feedback; thus, this course was added in order to model that process at the end of the first year of the program.

The final goal of this course is "rediagnosis" or "re-evaluation" (Knowles, 1984, p. 49), a process in which students make changes to their initial problem of practice or emerging research question and create a plan to review new literature based on what they have learned. For example, a community college librarian investigated online embedded librarianship as a means to support both face-to-face and online English composition courses. Her literature review included theories of online learning and instruction, prior research about information-literacy skills needed by learners, ways in which academic libraries have supported such learners, and current trends and research about embedded librarians. Based on her review, she concluded that although embedded librarians successfully contribute to information literacy in online settings, they tend to find the workload challenging. She therefore focused her dissertation research on how to reduce this workload and how to time the presence of embedded librarians in English composition courses so as to increase information literacy.

KEY CONSIDERATIONS

These four initial courses from the UF EdD EdTech illustrate how to design the curriculum in an online professional doctorate that intentionally connects theory, practice, and research and is grounded in adult learning theories. Our description of these courses focuses on the operationalization of adult learning theories for professional doctoral

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students; the online nature of these courses is discussed in detail in the next chapter. The online doctorate requires that the curriculum be designed with great forethought for professional learners who do not have opportunities to learn within an on-campus community and do not automatically make connections between theory, research, and practice on their own. In this section, we discuss key considerations for designing such a curriculum.

Keeping the curriculum relevant. The goals and purpose of an online professional doctorate form the foundation of curriculum design and the ways in which this design connects theory, research, and practice. What counts as knowledge and how it is assessed, taught, and applied will vary by discipline; however, the theories reviewed in this chapter apply to all adult learners and can, therefore, be integrated into all disciplines. Learners in an online professional doctorate often live and work at a distance from the university. The content of their academic pursuits must be relevant to their needs and goals and applicable to their professional contexts if they are to stay motivated; to this end, an online professional doctorate must provide opportunities for students to connect theory, practice, and research. In our experience, although professionals relate to theories most easily if they connect the theories to their experiences and contexts, they do not always do so on their own—curriculum must be designed for this purpose. At the same time, program leaders should be willing to adapt the curriculum to the changing needs of learners and the discipline. For example, during initial offerings of the UF EdD EdTech, the sharing of research on Twitter was not very prevalent. Later cohorts, however, were encouraged to create their own hashtag, and for the fourth cohort, we added content to the curriculum about how scholars use social media to disseminate their scholarship and to enhance their professional and academic presence.

Sequencing courses. With a cohort model in which all students take the same courses at the same time, the careful sequencing of courses and assignments can facilitate student development and progress. Based on feedback from our first cohort, we revised the sequence of courses so that research courses were offered earlier, and we mapped out activities that scaffolded students' identification of areas of research specialization. Online professional doctorates that do not include planned coursework

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but rely on doctoral seminars and colloquia can also include such activities, as can individual advisers or mentors working with online professional doctoral students. We have been fortunate to work in a team environment, where the program coordinator plans the curriculum and all faculty members collaboratively make decisions on proposed courses and activities. While working with adjunct faculty or faculty from other programs, it is important to ensure that they are willing to collaborate and include activities in their courses that address the goals of the program curriculum, and that their course design is grounded in theories of adult learning.

Scaffolding and mentoring areas of specialization. In addition to including the required content (e.g., theories, research methods, scholarly approaches) that is essential to a terminal degree in a particular discipline, scaffolding the students' selection of areas of specialization can contribute to transformational learning. Professionals often identify multiple areas of interest and problems of practice, but not all of them can be addressed during a doctorate, and it may not be possible to research certain ideas without access to funding; therefore, faculty advising and mentoring is important for guiding students in choosing areas of specialization in a professional doctorate. In the UF EdD EdTech, students sometimes also find that their initial research questions have been partially answered in prior research and that new research questions emerge. Extensive feedback and dialogue are valuable in advising students at this stage, especially because online professional doctoral students are not embedded in a university environment and are therefore sometimes unfamiliar with the types of research expected in the doctorate and with ethical and political considerations that delimit research in professional contexts. Furthermore, guiding professionals to set goals and milestones early in an online program can increase their self-direction and accountability for learning.

Implementing projects, reflecting, and sharing with peers. In addition to connecting theory and research to practice, the curriculum should provide opportunities to implement small projects that facilitate reflection on content such as research questions or instructional design, research design or implementation, and results. Moreover, sharing these experiences with peers in a cohort has been extremely valuable to students

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in the UF EdD EdTech because others in the field are able to provide important perspectives. For example, a student describing a faculty development project to her peers received feedback from another faculty developer about her experiences implementing such a project and from an instructor who had attended similar faculty development events. In another instance, a middle school teacher using particular theories to design instruction to foster metacognition received feedback from an elementary school teacher and a college instructor who had used the same theories to design their instruction. The online program can provide a safe environment in which students can participate in candid, encouraging discussions with colleagues who do not work at the same institution as them; this opportunity has been highly valued by students in our online professional doctorate. The implementation of small projects, reflection on the process and outcomes, and discussion with peers has led to the transformative learning, re-evaluation of understanding, and critical thinking that is essential for a scholar. Nevertheless, students in certain professional contexts (e.g., some corporations, the military) have experienced challenges in implementing, reporting on, and discussing such projects during their tenure in our program because of issues of confidentiality.

CONCLUSION

The learning and teaching experiences of educators designing and implementing online professional doctorates are often grounded in research-based, discipline-specific, on-campus doctoral education, which is distinct from the curriculum and experiences needed by researching professionals in an online professional doctorate. To assist program leaders with curriculum design, this chapter provided an overview of how Knowles's (1984) theory of andragogy, Mezirow's (1990) theory of transformative learning, and Lave and Wenger's (1991) work on situated learning can be relevant to professionals aiming to apply existing knowledge to their own research in their contexts. Online courses, seminars, and interactions that bridge transactional distance between professional learners, their instructors, and their peers and that also integrate theory, research, and professional practice must be purposefully designed in advance and cannot be left to chance or negotiated on the fly. Online

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curriculum design should ensure that the goals of the professional doctorate are achieved, but it should also allow professionals sufficient flexibility to accommodate their diverse research interests, professional goals, and motivations for completing a doctorate.

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PART II

Implementation

3 Building an Online Community of Researching Professionals

The retention of professionals in online doctorates is influenced by the students' sense of connectedness to the institution and their peers and by their sense of belonging to an online academic community with shared goals and challenges. Students in traditional programs have been known to experience three stages: transition and adjustment, the attainment of candidacy, and the dissertation (Tinto, 1993). During the first stage, they acclimatize to the expectations and rigours of doctoral study and connect with their faculty members, department, and peers. In the second stage, students acquire the knowledge and skills needed to advance to candidacy and conduct individual doctoral research. The dissertation stage is the one most influenced by the student-mentor relationship. In many disciplines in the United States, the first two stages are usually integrated into coursework with structured expectations and assignments.

In an online professional doctorate, the building of community among professional students located at a distance from the institution and each other is crucial in the first two stages; the relationships with faculty and peers that students build during these stages carry them through the rigours of the less structured dissertation stage. According to Kember (1995), distance graduate students also go through three phases: separation, transition, and incorporation. Kember asserts that, unlike traditional students, distance graduate students adjust to their

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role as a student while also fulfilling other roles. During this process, they constantly assess the value of their educational experiences, and social and academic integration are the key factors in their decision to continue their education.

The feeling of connectedness to their academic program, their peers, and the institution at which they study, a feeling that tends to be stronger in the context of a robust support community, can help online doctoral students persist and succeed while juggling multiple commitments and challenges. In this chapter, we describe the design of an online community of inquiry that facilitates interactions about theory, research, and practice and helps online professional students build relationships that will support them throughout the program. Following a brief overview of the literature on community, connectedness, and transactional distance in the online environment, we describe in detail the critical roles of faculty presence, social presence, cognitive presence, and learning presence in the building of a community of inquiry. The chapter ends with key considerations for others seeking to build such a community.

ONLINE INTERACTIONS AND DIALOGUE

Transactional distance, the "psychological and communication space" (Moore, 1993, p. 22) between interacting people in an online environment, can be bridged with the help of dialogue. According to Moore (1983), the amount of dialogue between the teacher and the learner in the online environment is inversely proportional to transactional distance—the more the dialogue, the less the distance and vice versa. However, the theory of transactional distance acknowledges the existence of other variables that influence the learner-teacher dialogue, including the personalities of the learner and teacher, the program content, and the technologies used to communicate, all of which can influence the transactional distance. Moore contends that the amount of structure provided in an online environment also influences learner autonomy: an environment that is less flexible and provides fewer options to the learner to make choices results in low learner autonomy. Moore's description of autonomous learners corresponds well to the doctoral endeavour, and the structure needed in the online environment must inform the instructional design of online professional doctorates. Moore asserts that

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dialogue in online transactions should be "purposeful, constructive and valued by each party. Each party in a dialogue is a respectful and active listener; each is a contributor, and builds on the contributions of the other party or parties. The direction of a dialogue in an educational relationship is toward the improved understanding of the student" (p. 24). Learners as responsible decision-makers in their learning and the teacher as a guide make the theory of transactional distance a useful framework for the online professional doctorate.

Dialogue plays an important role in online learning and is essential to learner motivation and retention. For a learning environment to be effective, it must include opportunities for learner-content interaction, learner-teacher interaction, and learner-learner interaction (Moore, 1989). An online environment available to learners 24/7 makes it possible for all three types of interaction to occur at any place and anytime, as long as the learners and the instructors have access to it. These interactions can take place synchronously in real time or asynchronously and in different virtual spaces, but they can provide for consistent connections among online learners. In an online professional doctorate, such interactions are particularly valuable for working professionals embedded in work and personal communities, because the professionals can remain connected to an online academic community and academic conversations. Purposeful design based on prior research can be extremely beneficial for doctoral students and instructors in terms of professional development, cognitive development, and psychosocial support.

Learner interactions have been categorized as either task driven or socioemotional, a distinction that is helpful in designing online environments. Task-driven interaction relates to the completion of tasks—such as discussion prompts, group projects, or peer assessments—set by the instructor, while socioemotional interactions are interactions originating from learners that involve sharing information, emotions, and encouragement (Hare & Davies, 1994). It is possible to design curricula that provide opportunities for online interactions of both types. Although a task-driven prompt does not originate from the learner, it can encourage learners to share information about themselves, their challenges, and their strengths and can lead to socioemotional interactions that continue and evolve beyond the specified task. It is important to provide openings for such dual-purpose interactions because "the more

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one discloses personal information, the more others will reciprocate, and the more individuals know about each other, the more likely they are to establish trust, seek support, and thus find satisfaction" (Cutler, 1996, p. 326). The establishment of trust is critical for learners to feel comfortable interacting with each other in the online environment, for learner motivation and willingness to engage, and for the sustainability of online interactions. The provision of a safe environment where it is clearly acceptable to be vulnerable—to make mistakes, share concerns and anxiety, and reveal weaknesses—is crucial in an online doctorate. In the face-to-face environment, such relationships are built in graduate student meetings and student cafés and during informal meetings on campus. In the absence of physical spaces, it is critical to structure safe online learning spaces and opportunities for interactions because in the absence of a safe environment, students will not feel comfortable sharing their anxieties, constructively critiquing the work of others, and giving honest feedback, all of which are important for building a sense of connectedness and community and for program completion.

Sense of Community and Community Building Online

An online environment in which students feel comfortable interacting with each other and their instructor is insufficient if it does not also foster feelings of connectedness and belonging to an institution and peer group, which is essential for student retention in higher education—especially doctoral education. At the doctoral level, a sense of connectedness can influence motivation and persistence, prevent isolation and anxiety, and assist in the completion of doctoral studies, which are often fraught with challenges and anxiety (Kumar & Johnson, 2014). Terms such as *psychosocial support*, *social integration*, *community*, *community building*, and *sense of community* abound in the literature on student retention, doctoral student support, online course design, and online learning environment design (Hayes & Koro-Ljungberg, 2011; Palloff & Pratt, 1999; Rovai, 2002b; Tinto, 1993). Especially for adults who are self-directed and driven by their need to learn, a sense of community is important for program completion. While acknowledging the importance of the other concepts listed above, we focus in this section on sense of community and community building. We discuss psychosocial support in the context of online dissertation mentoring in a later chapter.

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In the online environment, common interests and social relationships can create feelings of transactional proximity despite geographical dispersion. McMillan and Chavis (1986) define sense of community as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (pp. 8–9). They identify the four elements of community as membership, or a feeling of belonging and personal relatedness; influence, or "a sense of mattering, of making a difference to a group and of the group mattering to its members" (p. 8); the integration of members; and (d) an emotional connection based on sharing feelings and thoughts and having similar experiences. Extending this definition, Rovai (2002b) identifies two additional aspects of community—connectedness and learning. Connectedness refers to spirit (sense of cohesion and bonding) and trust among individuals, as well as to the sharing (interaction), challenging, and nurturing that take place within a group, while learning "reflects the commitment to a common educational purpose" (Rovai, 2002a, p. 3) and is supported by interactions among group members. Learning interactions that allow reflection on individual and group progress, foster sharing and critiquing, and are based on similar interests and common goals lead to a sense of community. Rovai (2002a) views learning as the knowledge and meaning actively constructed, acquired, and sustained in a social community of learners who share knowledge, values, and goals. Such community is built on interactions, and students with a stronger sense of community achieve greater levels of cognitive learning (Tinto, 1993).

We have found that a sense of community is essential to student success in an online professional doctorate, where learning and feelings of connectedness emerge through shared challenges, successes, and educational goals; individual and shared professional goals; and the building of shared knowledge and values from individual disciplines and professional contexts. Many different factors can influence the building of community, and the literature offers many lenses through which to view community. In this book, we base our discussion of community building in an online professional doctorate on a widely recognized framework in online education—the community of inquiry framework, developed by Garrison, Anderson, and Archer (2000).

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THE COMMUNITY OF INQUIRY IN A PROFESSIONAL DOCTORATE

The community of inquiry framework provides a useful structure for conceptualizing online teaching and learning in an online professional doctorate. Grounded in theories of adult learning, the University of Florida's EdD EdTech was conceptualized as a community of inquiry in which students in a cohort with common goals advance through a structured program, purposefully interact with and support one another, and receive intensive support from faculty members (Kumar, Dawson, Black, Cavanaugh, & Sessums, 2011; Kumar, 2014c). In the sections that follow, we review the three main dimensions of the community of inquiry framework—teaching presence, social presence, and cognitive presence—as well as learning presence, an additional dimension that researchers recently proposed. We detail how each of the four dimensions of the framework can inform the design of an online professional doctorate that aims to facilitate transformational learning. We also provide examples of implementation and findings from research conducted in the UF EdD EdTech that support our assertions about the value of these four dimensions in an online professional doctorate.

FACULTY PRESENCE

Anderson, Rourke, Garrison, and Archer (2001) define teaching presence as "the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (p. 5). An instructor's ability to design, plan, structure, and organize an online course becomes extremely important when the opportunity for face-to-face interactions is limited or nonexistent. Based on our research in the first two iterations of the UF EdD EdTech, we realized that teaching presence in an online professional doctorate can be more accurately termed faculty presence, meaning that multiple faculty members not only teach, support, and mentor online doctoral students in multiple virtual environments about research and professional goals but also administer the program (Kumar et al., 2011; Kumar & Ritzhaupt, 2014). We define faculty presence in terms of instruction and mentoring, curriculum design and sequencing, and program leadership, all of which can successfully contribute to the design of an online professional doctorate.

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Instruction and Mentoring

In online courses, where students do not see the instructor in a physical classroom, teaching presence is crucial for student learning, and the creation of a community of inquiry (Akyol & Garrison, 2008; Shea, Li, & Pickett, 2006). Anderson et al. (2001) identify the components of teaching presence as instructional design and organization, the building of understanding, and direct instruction in the subject matter. These components include the facilitation of student interactions, the management of discourse, and the provision of effective and immediate feedback. In summary, teaching presence encompasses instructor organization and communication in all aspects of an online course (Shea, Hayes, & Vickers, 2010). Doctoral students also require mentoring in the form of program planning, research support, and writing support to leverage the opportunities presented by professional organizations, conferences, grant projects, and networking in their disciplines. In an online doctoral program, faculty presence, therefore, transcends instructional design, direct instruction, and facilitation of program coursework and takes the form of direct instruction and facilitation of program interactions about topics that develop habits of mind in that profession or discipline (Kumar et al., 2011). Furthermore, students' relationships with faculty mentors or supervisors are important factors in their completion of a dissertation because these relationships shape students' research skills, professional identities, and careers. Therefore, in addition to online course design or facilitation, faculty in an online doctorate must be able to advise, encourage, model disciplinary thinking, and develop mutual trust in the absence of face-to-face communication.

We used an adapted version of the community of inquiry (CoI) survey (Arbaugh et al., 2008) at the end of the first year of the first three program iterations of the UF EdD EdTech. Students in each iteration agreed that faculty presence, feedback, and support were strengths of the program (Kumar, 2014c). Faculty in our discipline of educational technology possess expertise in online teaching and learning, instructional design, course structure, and organization that has enabled them to create a structured course sequence, ensure consistent communication between students and faculty within courses and about program-level issues, and provide instruction that helps students apply their knowledge to further their professional goals. Because of their comfort with the

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online environment, faculty members are also able to develop respectful relationships based on subject-matter expertise, online interactions, and trust. A student commented in the anonymous CoI survey that "the courses have been satisfying and well-designed, and I personally feel that I have learned a great deal on the topic, on my specialties, and on myself due to the instruction, feedback, and support of the faculty" (November, 2013).

However, when faculty members without online teaching experience have taught in our program, we have received negative feedback from the students. If instructors do not have previous experience with designing and implementing online courses, they should receive opportunities to learn strategies for crafting online activities that will foster critical thinking, for facilitating online discourse, and for structuring tasks that will help students meet course goals, program goals, and professional goals. They should also receive guidance in developing an online course and in online instructional design. In general, online courses in a professional doctorate should include the following:

- opportunities for synchronous and asynchronous interactions with professionals and peers
- reflection and discourse that connects theory, research, and practice
- structure that helps working professionals plan the time and effort required to succeed
- support in accessing and using on-campus resources (e.g., library databases)
- multiple types of resources, multimedia, and assessment formats to encompass the wide range of learning preferences.

Curriculum Design and Course Sequencing

In addition to faculty presence in the form of structuring interactions, facilitating discourse, and providing feedback, a curriculum that emphasizes consistent faculty presence is crucial in an online doctorate. We purposefully created the curriculum for the UF EdD EdTech to combine theory, research, and practice and to be relevant, situated, and reflective for professionals. One faculty member owns each online course in

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the program and is responsible for teaching it and keeping it current. Courses are sequenced to help students acquire the skills and knowledge needed at the dissertation stage. While the program coordinator leads the vision for the curriculum, all courses and their content, the faculty members who create and teach the courses are involved in regular meetings about how their courses fit into the complete curriculum. These conversations are necessary for maintaining faculty presence and consistent instructional design across the program. The courses also allow for all faculty members to teach a core course to students in the first two years so that the students get to know all faculty members well before working with them on their research design and dissertation.

What constitutes theory and research and how to apply it to practice in an online professional doctorate differs among disciplines, but the foundational knowledge for each discipline is generally clear, as are the research methods with which researching professionals should be familiar. The depth of knowledge in the area of specialization within the discipline and the types of research that students would need to conduct to demonstrate expertise may differ based on the program, faculty member, and institution. Nevertheless, the doctoral curriculum must be carefully structured to provide students with opportunities to acquire knowledge and assess that knowledge in all of these areas. Program professionals often begin by attempting to move a successful on-campus program online. Although this may succeed for individual courses, creating an online program requires additional structure and planning, different types of activities that are planned across courses, and careful and detailed design for intentional interaction. Program designers often underestimate the amount of formal and informal on-campus faculty-student and student-student interactions that take place on campus, so the opportunities for similar interaction must be purposefully included in online environments. This is especially important for professionals embedded in work environments at a distance from the university.

In the first iteration of the UF EdD EdTech, student feedback in the form of interviews and a survey indicated that content and assignments sometimes overlapped or were similar across courses and that knowledge needed at the qualifying examination and dissertation stages had not been delivered in the coursework. Although it is not possible to

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cover all areas that may be important for qualifying exams, this feedback prompted us to streamline the curriculum across core courses. We continued to collect feedback from each cohort and modified both the curriculum and the sequence of courses based on this feedback.

Program Leadership

In the UF EdD EdTech, online doctoral students complete two years of structured coursework before working one on one with faculty members to conduct research and write their dissertations. In the first iteration, two faculty members led the program while two others participated in weekly meetings and discussions. Because of the collaboration and understanding between the two leading faculty members, this model was successful in communicating a common vision and cohesive faculty presence to students. Nevertheless, the demands of teaching, research, and service make it difficult for multiple faculty members in a program to remain consistently involved in collaborative leadership. In our case, this led to the hiring of a faculty member who serves as program coordinator and the initial academic adviser for all students, while other faculty members continue to participate in weekly meetings and updates. Based on the success of this initiative, we recommend that a full-time faculty member assume leadership of a program for a certain period of time, and that such leadership be rotated, if possible.

Although some instructors will inevitably be more involved than others in the various facets of a program, and although programs may use a combination of full-time and part-time faculty members, we believe that a uniform vision and effective communication of that vision is essential for the success of an online professional doctorate. In order to truly represent the program as a cohesive faculty, all instructors involved in an online professional doctorate should be familiar with the theoretical foundations, requirements, and goals of the program in general and should understand how their courses or subject matter fit into the larger curriculum. Additionally, consistent communication between faculty about program-level issues, an understanding of administrative procedures, a reliable source for information on such procedures, and support structures for online students can provide students with a consistent experience across courses in an online program.

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SOCIAL PRESENCE

Garrison et al. (2000) define social presence in the community of inquiry as the ability of learners to portray themselves as "real people" (p. 89), which, in the absence of face-to-face communication, must be done through online interactions. Social presence has also been defined as "reciprocal awareness by others of an individual and the individual's awareness of others . . . to create a mutual sense of interaction that is essential to the feeling that others are there" (Cutler, 1995, p. 18). This perception of others being real or present has been found to influence learning outcomes, students' cognitive presence, purposeful communication, and group cohesion (Hughes, Ventura, & Dando, 2007; Richardson & Swan, 2003; Swan & Shih, 2005). Group cohesion, the establishment of social relationships, and the feeling that others are present can strongly influence students' motivation to interact, persist, and complete an online professional doctorate.

We have found that in an online doctoral cohort of students working in various parts of the globe in different job roles, identification with the community, purposeful communication within a safe environment, and the development of trust and social relationships are important for the creation of a sense of belonging, student retention, and student support of individual and collaborative inquiry. We agree with Akyol, Garrison, and Ozden (2009), who assert that social presence is "an important antecedent to collaboration and critical discourse because it facilitates achieving cognitive objectives by instigating, sustaining, and supporting critical thinking in a community of learners" (p. 67).

The stages of transition and adjustment, candidacy, and dissertation (Tinto, 1993) identified in traditional doctoral programs can be supported in the online environment by the use of a cohort model and the building of social presence. These strategies are crucial in the first stage of an online professional doctorate because they can help students proceed through the second and third stages, thus improving student retention. In the UF EdD EdTech, we have found that students who successfully complete the transition and adjustment phase (in our program, the orientation and the first semester) persist to become doctoral candidates, and approximately 70 percent have completed their dissertations. Several of our students have highlighted the role of cohorts and peer support in their successful candidacy and dissertation completion.

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In the next sections, we discuss the building of social presence during the first two stages of an online professional doctorate—transition and adjustment and candidacy—based on the design of the first two years of the UF EdD EdTech. We address the details of connectedness and community during the dissertation stage later in the book, when we focus on online mentoring.

During Transition and Adjustment

Our experiences in the UF EdD EdTech reinforce Swan's (2003) assertion that the building of social relationships is foundational for purposeful communication and group cohesion. Making online acquaintances, exchanging ideas, and establishing long-term or intense associations with others are considered the three stages of online community creation to reach camaraderie (Brown, 2001). In our online professional doctorate, we aim to achieve such camaraderie at the end of two semesters, at the latest. In our first iteration, all of the students in our cohort met for the first time on campus for a summer session at the end of the first year and reported that social presence was strongest at this time (Kumar et al., 2011). As a result, for subsequent cohorts, we added an on-campus orientation to the beginning of the program. Feedback from the second cohort about the orientation included comments such as "Please consider changing the first summer meeting to allow for more cohort meeting and relationship building time, both with faculty and students" and "The intro session for Summer 2010 was terrific. I wish it were longer and provided more opportunities for getting to know each other." Notwithstanding the opportunities provided online, we learned that a face-to-face meeting can speed up the process of students getting to know each other and faculty members, thus establishing a comfort level that can be built upon online. Students in both the first and second cohorts of the program rated on-campus meetings higher than online synchronous or asynchronous meetings for social presence (Kumar et al., 2011; Kumar & Ritzhaupt, 2014).

Nevertheless, during the initial orientation for our second cohort, students focused on the faculty members, whom they viewed as their main partners in the doctoral process, as well as on the content of the program and what they needed to do to succeed. Based on their previous master's program experiences, in which peers had not played a

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major role in their success, they made minimal effort to connect with their peers. We emphasized during orientation the role that peers would play in future stages of the doctoral program, the support that they can provide, and the importance of community for decreasing isolation, but the emphasis was apparently inadequate because students did not realize the importance until later.

The orientation for the third cohort of students included time for students from the second cohort to share their experiences and highlight the role that the community and the cohort played in their successful progress. Hearing from prior students and graduates about the importance of peer support proved to be instrumental in the efforts new students made to get to know each other during the on-campus orientation. The third cohort cited this orientation as crucial for getting acquainted with peers and faculty members and for bonding. If an on-campus orientation is not possible because of travel constraints, program designers should consider an online synchronous orientation, followed by an online synchronous meeting during which students can get to know each other.

Students in an online professional doctorate are already part of multiple communities and networks (e.g., work communities and professional networks; personal communities of friends and family; and other social communities where they may participate in coaching, religious activities, and sports). To succeed in an online professional doctorate, students must become part of a new online academic community and participate in professional networks that promote and support scholarship and research in the discipline. They must realize the value of these communities and of other support structures to their studies and their professional activities. In addition to faculty-led environments, such as an intensive orientation and monthly online sessions to keep students connected during the first semester, it is important for students to have online spaces where they can interact in the absence of faculty (Kenney et al., 2013).

The second cohort in the UF EdD EdTech shared with faculty the value of a social network that kept them continually connected to their peers and increased their comfort levels with each other, providing psychosocial support and facilitating regular academic conversations. In the CoI survey, this cohort rated their Facebook group as second to the face-to-face summer session in terms of its value for building community and learning (Kumar & Ritzhaupt, 2014); one student commented, "The

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Facebook group was definitely what has allowed us to become a cohesive cohort." During the orientation, students shared with the next cohort several examples of situations in which discussions on the Facebook group had helped them overcome frustrating moments and complete difficult assignments. The first task we set for our third cohort, therefore, was to choose a social network and build a group that would serve as a private medium to connect with peers. Data collected from this cohort indicated that the Facebook group was instrumental in building trust, in retaining four students who almost quit the program for varying reasons, and in supporting several others during the first year and beyond. A student from this cohort commented on social presence at the end of the first year in the anonymous CoI survey, stating, "The sense of community experienced online has been greater than the one experienced in face-to-face programs." The most successful strategies for social presence in our program have been the use of a social network that is already part of students' daily technology use and the student-driven approach that addresses individual and group needs (Kenney et al., 2013).

Social Presence for Candidacy

We define successful candidacy in a professional doctorate as the ability to successfully connect theory, research, and practice. To create a scholarly community in an online professional doctorate, interactions must be purposefully scaffolded not only within online coursework and smaller inquiry groups but also in the form of online synchronous meetings and on-campus meetings, when possible. The following sections describe different interactions that we view as valuable.

Online coursework. A course in an online professional doctorate should include multiple opportunities for synchronous and asynchronous interactions in multiple online spaces. In the UF EdD EdTech, three of four courses in the first year require two synchronous sessions during a semester, in addition to asynchronous meetings. Dates and times for these sessions are communicated well in advance to enable professionals in the program to plan to attend. Built into the courses are strategies for developing and maintaining social presence, such as welcome messages; the sharing of student profiles, work problems, and stories; audio and video messages from instructors; structured collaborative activities;

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peer feedback and frequent instructor feedback; and the use of humour (Aragon, 2003). Several activities in the courses require students to share their professional contexts and current problems of practice and make connections among theory, research, and those problems. In order to build social presence, students need to feel comfortable communicating online, both on discussion boards and in synchronous online sessions; they must also be willing and able to exchange feedback with their peers. If students are initially less familiar with certain forms of online communication, various strategies can be used to help them build social presence: for example, online tutorials, instructors' tone and encouragement in the form of emails and presence, the modelling of effective communication, and a variety of communication media (i.e., synchronous, asynchronous, formal, and informal).

Inquiry groups. Based on their areas of research specialization, we group students together into inquiry groups of five or six students in the first semester of the UF EdD EdTech. These smaller groups allow students to build a smaller community with whom they can share their initial problems of practice and research questions and the related literature that they are exploring. Simultaneously, we place them in random groups for a collaborative assignment in another course. This gives students the opportunity to get to know a larger number of peers more closely and to choose individuals with whom they may want to work. In two other courses in the first year, students are encouraged to change and modify these groups based on their comfort levels and needs. Cohorts in our program have formed their own inquiry groups based on proximity (e.g., students living in the same state); context (e.g., students working in elementary schools or in the nursing profession); and research interest (e.g., students interested in gaming or gamification, albeit in different contexts). Periodically, these groups report on their collaboration during the online synchronous meetings.

The building of community in a cohort is essential for connectedness and retention, but the formation of smaller groups is necessary for students to work together on their research and support each other with feedback. Initial formal structures that force online students to interact help them get to know each other and to identify those with whom they would like to collaborate. This process of formal to informal small-group

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structures has been successful in the UF EdD EdTech in that it provides students with "critical friends" and additional opportunities to make connections between their professional practice and existing theories and research in the discipline. An open-ended student response in the "social presence" section of the CoI survey read, "Inquiry group work helped me define my niche and build a strong sense of community that I did not find in whole-group discussion within my courses." Groups collaborate to various levels, from sharing and maintaining common resources in a bibliographic software (e.g., Mendeley) to actively reading each other's dissertation drafts and practicing presentations together.

Online synchronous meetings. Compulsory monthly real-time conferencing sessions using software that enables live audio and video helps maintain communication outside of courses and provides opportunities for students and faculty to share information related to scholarship and professional events. We recommend that these meetings begin as faculty-driven events and, with a gradual transfer of responsibility, become student driven. In the UF EdD EdTech, faculty members initially structure these meetings to model scholarly thinking and a critical approach to the discipline. During initial sessions, faculty discuss their own professional conference experiences and current research projects, or current topics in educational technology. During the second semester, students plan and lead these sessions and share their thoughts about areas to research, conferences to attend, or their search for research literature. Eventually, inquiry groups lead these sessions, with students in the group making presentations about their collaboration and individual research projects. While maintaining communication and continuity outside of courses, these sessions facilitate conversations between faculty and students about the discipline and the doctoral process. Some cohorts may want to focus each session on a specific topic, such as research methods or a particular conference. In the UF EdD Ed Tech, topics covered include questions about the program, student concerns, and information about conferences and professional events. At the end of each semester, we solicit suggestions from students about topics that would help them in future semesters. One positive effect of these sessions is the strengthening of connection between students and faculty. A student from our second cohort reflected, "Synchronous sessions are great. Having all of

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the faculty participate is fantastic. It really makes me feel like they are interested in us and are invested in our success."

Face-to-face meetings. In addition to the multiple opportunities to communicate and stay connected online, on-campus experiences help students get better acquainted and strengthen their connections with each other and with faculty (both in and outside of the program), administrators, librarians, and other resources on campus. The initial orientation and yearly face-to-face meetings emerged in our CoI surveys as extremely valuable for social presence and for the building of community (Kumar, 2014c; Kumar & Ritzhaupt, 2014). When students are able to get to know each other in a social environment (e.g., over dinner, while watching a game), they begin to perceive each other as individuals and not just fellow students. On-campus presence also makes it possible for faculty members to hold group or all-cohort sessions in which the intersection of theory, practice, and research can be communicated in a scholarly manner. Students can meet with faculty experts from outside the program, who share their expertise in areas such as academic writing and specific research methods.

In addition to these intentionally designed face-to-face experiences, program participants sometimes meet at off-campus venues, and these interactions also help to build scholarly community. Students may meet at professional events and conferences, and some online professional doctorates encourage and include seminars at such meetings. Student orientations or yearly meetings may take place at the leading conference in their disciplines. Students may collaboratively present a poster or paper at a conference, facilitating a face-to-face meeting and connections among program learning, professional application, and research in the discipline. In such contexts, students may interact with experts other than program faculty about their disciplines, various academic endeavours, and research and application in their professional practice. It is important to create opportunities within the doctoral program for students to reflect on these conference experiences and share them with peers.

Notwithstanding the value of different types of synchronous and asynchronous interactions that are purposefully built into an online professional doctorate to ensure social presence and productive scholarly dialogue, students who have common research interests also socialize in

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informal spaces such as Twitter, Google Hangouts, professional webinars, and LinkedIn Groups,. Strategies for using online spaces to stay connected in a scholarly community can be modelled by faculty members and discussed in synchronous sessions.

During the Candidacy and Dissertation Stages

By the time the students in the UF EdD EdTech are entering their second year, the synchronous and asynchronous interactions described above have built social presence and cohesiveness in our online cohorts. At this time, the larger cohort, as well as the smaller inquiry groups, begin to focus on building a set of resources about research topics and the larger discipline in preparation for qualifying exams. Activities that our cohorts have undertaken outside of required coursework include compiling a wiki with resources on different paradigms in educational technology that they could then use to study for qualifying exams, collecting notes that several cohort members had created about topics in educational technology and posting them in a virtual space, and building small study groups to discuss their strategies for preparing for qualifying exams.

After students complete qualifying exams, we encourage them to form a plan for supporting each other through the dissertation. In addition to online mentoring by faculty members, students adopt various strategies within their inquiry groups, such as asking peers for advice, meeting regularly online (or face to face, if possible), reading each other's drafts; and providing feedback and motivating each other on Facebook (Kumar, Johnson, & Hardemon, 2013). Students in our program have often described both the psychosocial and academic support of their peers and cohort as crucial for dissertation completion.

COGNITIVE PRESENCE

Garrison et al. (2000) define *cognitive presence* as the ability of participants in a scholarly community to construct and apply meaning using sustained reflection and discourse. Cognitive presence is developed in four stages: the identification of a problem, the exploration of the problem individually and collectively through discourse, the integration or construction of meaning through exploration, and the resolution or application of meaning to new contexts (Garrison, 2003). Cognitive

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presence is influenced by faculty presence and social presence and especially by the instructional design of online activities, course structure, instructor feedback, and leadership (Garrison, Anderson, & Archer, 2001; Garrison & Cleveland-Innes, 2005; Garrison, Cleveland-Innes, & Fung, 2010). In a professional doctorate, however, students' self-direction, reflection, and effort contribute as much to cognitive presence as does instructional design.

In the UF EdD EdTech, problem definition, exploration, and reflection are facilitated in the synchronous and asynchronous interactions described above, which have been rated highly in all offerings of the program and have provided students with multiple opportunities to apply newly acquired knowledge and skills in their professional contexts (Kumar et al., 2011; Kumar & Ritzhaupt, 2014). Similar to social presence, in an online professional doctorate, cognitive presence transcends formal program interactions as students interact with each other, faculty, colleagues, and experts in the field during professional conferences or on social media (Kumar et al., 2011). Cognitive presence thus develops in multiple learning environments, including those within and outside the university, formal and informal, and online and face to face. In an online professional doctorate that aims to connect theory, research, and practice, these various learning environments enculturate students into the discipline, familiarize them with scholarly thinking, and expose them to research and professional organizations in the discipline.

In designing an online professional doctorate, it is critical to consider the goals and learning objectives that correspond to cognitive presence. We define cognitive presence in terms of students' professional growth, their adoption of a research-based approach, and their application of research in their professional practice to create positive change. To this effect, students identify a problem of practice early in the program, explore related theory and literature, and apply these to interventions and research over several courses in the program. Students have found this structure to be extremely beneficial, as reflected in student comments in the anonymous CoI surveys at the end of their first year. "I really appreciate being able to individualize our class projects to develop newly learned concepts within our work environment," wrote one student, and another said, "The expectations of the program on

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the connection between theory and practice has definitely allowed me to grow in tangible ways as a professional."

At various stages within courses, students share their progress with peers and faculty asynchronously and during face-to-face or online synchronous sessions. The discussion within inquiry groups is focused on similar interests and research and therefore tends to be deeper and more critical. A student statement at the end of the first year reflected on how social presence in smaller and larger groups and in formative feedback enhanced cognitive presence:

> I was very prepared for the rigors of work that I would be engaged in, the time commitment necessary, the intense scheduling, and the support networks that I would need to be successful. I was not prepared, however, for the enrichment and engagement that would be present in the cohort model or the resulting personal evolution and growth. Specifically, this first year has had profound impacts on my personal perceptions, professional practice, overall understanding of doctoral study, and long-term professional goals. The opportunity to work alongside such incredible peers has been more rewarding and fulfilling than I could have imagined. (August, 2015)

For all three cohorts to date in the UF EdD EdTech, end-of-first-year surveys revealed high cognitive presence (see table 1). Designing curriculum and interactions with the goal of cognitive presence in mind can result in significant cognitive presence. Students reported applying knowledge and skills learned in their work contexts; developing a research-based and data-driven approach to their practice; and sharing their new knowledge at the local, regional, and national levels. For example, one student stated in the "cognitive presence" section of the end-of-first-year anonymous CoI survey, "This program has helped me to truly understand the role of research in my professional practice. Although others in my professional practice do not apply research, it has still been beneficial for me to maintain and apply that knowledge and approach to my job role" (November, 2013). The areas of impact reflect the development of scholarly habits of mind such as intentionality, metacognition, critical-mindedness, creativity, clarity of expression in oral and written communication, and professionalism (Costa & Kallick, 2008). We describe in detail these data and ways to assess these areas of impact in chapter 8.

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Table 1. Cognitive Presence in Cohorts 1, 2, and 3 in the UF EdD EdTech

CoI survey statements (5 = strongly agree; 1 = strongly disagree)	**C1 Mean** (**N** = 16)	**C2 Mean** (**N** = 18)	**C3 Mean** (**N** = 14)
I learned a lot from the faculty.	4.56	4.62	4.43
I learned a lot from my peers in the EdD cohort.	3.81	4.06	4.69
I have applied knowledge or skills gained from Year 1 of the program to my practice/ work environment.	4.33	4.37	4.77
I have shared knowledge or skills gained during Year 1 of the program with my peers or colleagues outside of the doctoral program.	4.31	4.44	4.77

LEARNING PRESENCE

Notwithstanding the importance of strong faculty presence, social presence, and cognitive presence, it is only possible for connectedness and community to develop if the participants actively engage and participate. Each professional in an online doctoral cohort must be sufficiently motivated and able to engage and manage different types of interactions in a timely manner. This capacity for self-regulation, self-efficacy, and attendant effort is referred to as *learning presence* by Shea and Bidjerano (2010), who found that learning presence correlates positively with cognitive presence (Shea & Bidjerano, 2012). In the case of online doctoral students in a professional doctorate, self-direction and self-regulation in the form of planning, acting, monitoring, and assessing (Zimmerman, 2001) facilitates the reflection and metacognition essential for transformational learning and the completion of the doctorate.

Bachelor's and master's programs typically have mandatory course requirements and set goals and deadlines, whereas doctoral students are usually expected to decide what they will study and at what pace, when they will send their written work to faculty members, and how they will manage their progress. Students entering a professional doctorate are familiar with assignments that are completed for a particular faculty member and that focus on achieving a grade, but doctoral endeavours

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include writing for a larger audience, being open to criticism and feedback about ideas and writing, and improving on one's work until it is deemed appropriate. In a professional doctorate, this also includes writing for audiences beyond the academy, because the goal is to synthesize theory, research, and practice. Additionally, although online coursework may be structured and scaffolded for the design, implementation, and writing of a dissertation, the management and timing of the latter stages of a doctorate are the responsibility of the student, which makes self-direction essential. We highly recommend communicating the importance of self-direction in an online professional doctorate while intentionally scaffolding activities that facilitate student reflection on existing study skills, knowledge, professional goals, and a realistic plan for completing the doctorate. In the UF EdD EdTech, students plan their work in the professional doctorate not only in terms of their professional trajectory, their in-program and out-of-program experiences, and the types of research that would supplement their professional goals but also in terms of their time, commitments, and study habits.

In an on-campus doctoral program, students meet each other and faculty, participate in projects and attend classes, see others defend proposals and dissertations, and finally graduate; therefore, they receive constant reminders of what they must do to succeed. In the online environment, especially in a professional doctoral program, during which students are busy with other commitments, scaffolds for reflection and metacognition must be built into both coursework and dissertation mentoring, and success stories must be shared to motivate students. Research on the efficacy of the UF EdD EdTech has revealed that strong faculty presence combined with structures that facilitate social presence is insufficient if students are not cognizant of their role in the process and do not realize the importance of learning presence (Kumar & Dawson, 2012b). Sharing with students our findings from earlier cohorts and the strategies that graduates have recommended for completing the degree have been extremely valuable for increasing learner presence during the first year of the online doctorate. Early graduates of the program have emphasized that their time management and self-regulation strategies were instrumental in finishing earlier than their peers, while later graduates praised the program design, which guided them to be self-directed, as a significant contributor to their completion of the program (Kumar et al.,

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2013). Individuals enter professional doctorates with prior experiences and with preconceptions of online learning from their previous formal and informal academic and professional experiences. If they do not know how to be successful online learners, existing literature and advice from those who came before them can help them adopt strategies for success.

KEY CONSIDERATIONS

Based on data we have collected during our research on the UF EdD EdTech, feedback from students and graduates, and our experiences in both cohort-based and non-cohort-based online programs, we strongly recommend the use of a cohort model and a consistent focus on community building for a successful online professional doctorate. Professionals attempting to connect research and theory to their practice will be far more successful if they feel engaged and supported by peers and faculty members than if they feel isolated in their endeavour. In this section, we provide a brief list of considerations for others focusing on community building in an online professional doctorate.

Ensuring faculty expertise in online teaching and mentoring. In an online professional doctorate, faculty presence consists of direct instruction; online mentoring; and the facilitation of interactions about connections among theory, research, and practice in the profession, in the discipline, and across multiple disciplines. Strong relationships between students and their faculty advisers and research mentors are crucial for the completion of the dissertation. Therefore, faculty in an online doctorate must be able to effectively mentor, communicate, and teach in the online environment; they must assume the roles of subject-matter expert, instructor, instructional designer, research adviser, professional guide, and administrator. Faculty members working in an online professional doctorate must receive professional development and guidance to help them succeed in these roles and to maintain faculty presence.

The breadth of skills and knowledge needed to implement a professional doctorate often requires the inclusion of instructors from multiple disciplines, such as those specializing in research and evaluation (e.g., qualitative or quantitative methods), management (e.g., project management, organizational behaviour), or education (e.g., teaching methods, educational technology). Instructors from various disciplines

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may subscribe to different signature pedagogies and beliefs about the nature of knowledge and how it should be measured, how their subjects need to be taught, and student and instructor roles in graduate courses and/or online courses. Program leaders should discuss with these external instructors the importance of community building; strategies for faculty, social, and cognitive presence; and existing noncourse structures for building community. While leaders need to be cognizant of instructors' expertise in their subjects as well as their right to academic freedom, they must explain the needs of the professional doctorate, the differences between online and on-campus students and interactions, and the importance of quality and consistency in online course offerings.

Ensuring consistency in leadership and curriculum design. The careful sequencing of courses in a curriculum in order to set students up for success during the dissertation stage can decrease student frustration and faculty workload. In our experience, strong program leadership in which one faculty member is responsible for the program and oversees curriculum while keeping all involved instructors informed and included in decision making leads to clarity of program goals, consistency in the message conveyed to students, and cohesiveness in the program as a whole. In a doctoral program, students should feel comfortable reaching out to any faculty member at any time, based on their needs or research interests, and should feel supported by them, but they should also know exactly who to ask for immediate assistance. Additionally, the diversity of faculty and collaboration with faculty in other disciplines makes it important to create consistency in the course interface, the support provided, the use of cohort virtual spaces, the types of assessment, and the terminology used across courses. Administrative support and buy-in from leadership can contribute to collaboration and understanding across disciplines.

Designing for student-driven virtual spaces. Social presence during all three stages—transition and adjustment, candidacy, and dissertation—can be facilitated through multiple media and synchronous and asynchronous online interactions. Faculty-designed interactions in inquiry groups and regular online synchronous sessions help to facilitate social presence in different virtual spaces, and the gradual transfer of responsibility for these interactions from faculty to students has been successful in the

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UF EdD EdTech. At the same time, we highly recommend the use of a student-chosen and student-run social network group that keeps students connected to their peers, facilitates regular online academic conversations, and ensures psychosocial support. It is important for program leadership to communicate the need for and benefits of such a space—ideally, by inviting program graduates to share their experiences. Such communities are organic; therefore, although structures can be provided for the development of community, participants' willingness to engage and their understanding of the value of such a community are essential to its success, making it crucial to explain to students their role in the building of a community.

Emphasizing the importance of learning presence. The completion of online coursework that includes deadlines for assignments and interactions is relatively easy for successful professionals who have prior experience with this type of education. However, the process of conducting research, setting deadlines to write and submit drafts, and analyzing data at one's own pace can be extremely difficult when done for the first time. The importance of students directing themselves, implementing strategies for successful online learning, and asking for support must be explicitly communicated in an online professional doctorate. Students in the UF EdD EdTech have called this being "proactive, not reactive," because they have found that to succeed, they must do more than simply complete what is required each week. In addition to explicit requirements in the program, they need to read about their areas of interest, regularly review how they are working toward their research goals, plan for conferences and other professional development opportunities, manage their research bibliography, and interact with experts. Furthermore, our doctoral students have described time management and time to participate in the community as learning presence strategies that are critical to success.

CONCLUSION

Professionals embarking on an online professional doctorate already belong to several networks and communities, both socially and professionally. Adding the role of online student and scholar and accommodating academic commitments and engagement in scholarly pursuits while

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remaining embedded in existing communities can be challenging for them. Curriculum that scaffolds for community building and scholarly networks is essential to helping professional students overcome these challenges and persist during the dissertation stage of an online doctoral program. As discussed in this chapter, designing a community of inquiry that facilitates community building involves integrating faculty presence, social presence, cognitive presence, and learning presence into an online doctoral curriculum. Communities, however, rely on frequent and robust interactions of participants and cannot be created in a top-down manner. The autonomous nature of doctoral study and the self-discipline needed by students in online education further complicate such endeavours because professional student interaction can be influenced by nonacademic factors and a variety of events in students' lives. A curriculum that aims to build community, therefore, has to provide sufficient structure and scaffolding but must remain flexible and open to accommodate participants' personalities and diverse experiences and interaction patterns.

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4 Fostering Scholarly Thinking Online

Much has been written about how professionals should think and behave. The term *habits of mind* is frequently used to label professionals' dispositions and has been defined as "characteristics of what intelligent people do when they are confronted with problems, the resolutions to which are not immediately apparent" (Costa, 2008, p. 15). Commonly cited habits include persistence, flexibility, intentionality, metacognition, critical-mindedness, creativity, clarity of expression, and continual learning (Costa & Kallick, 2008), as well as measuring one's baseline performance, seeking feedback, and engaging in ongoing reflection (Chick, Haynie, & Gurung, 2012).

Individuals in numerous disciplines have attempted to identify habits of mind important for their professions. For example, habits of mind appearing in the medical literature include being attentive, curious, self-aware, and willing to recognize and correct errors (Epstein & Hundert, 2002), and in the nursing literature, habits of mind include being open to changing one's mindset and challenging preconceptions, beliefs, or assumptions and exhibiting critical thinking (Kotcherlakota, Zimmerman, & Berger, 2013). Habits of mind frequently appearing in the leadership literature include leaders being learners, participating in their worlds, valuing innovation, and having high standards (Reilly, 2007), and habits of mind proposed for librarians include thinking flexibly, aiming for accuracy, imagining, innovating, and questioning (Jacobs & Berg, 2013).

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We were unable to locate existing frameworks for habits of mind related to researching professionals such as those we prepare in our online professional doctorate. As we considered the habits of mind most pertinent to researching professionals, we chose to focus on one we believe connects together theory, research, and practice: researching professionals are individuals with the ability to address challenges and problems within their practice through theory and research. They can look beyond their contexts and often across disciplinary boundaries to explore theory and research that will enable them to make decisions grounded in more than gut feelings, prior experiences, and contextual factors. We refer to this ability—or habit—as *scholarly thinking*, and we believe that this is what separates researching professionals from other professionals. In this chapter, we provide a framework for the conceptualization of scholarly thinking in professional doctorates and then offer examples of how online professional doctorates can intentionally scaffold students to develop and exhibit scholarly thinking and to own it as the stance they take as researching professionals.

SCHOLARLY THINKING FOR RESEARCHING PROFESSIONALS

We conceptualize scholarly thinking for researching professionals as a reiterative process. It involves the ability of professionals to identify problems of practice, recognize theory and research related to these problems, select theory and research most applicable to helping them address problems, apply theory and research in their professional contexts to develop solutions to address the problems, evaluate how successful the solutions were to addressing the problems, and plan future steps to improve their practice based on what they learned.

Although researching professionals are usually experts in their field before they enter a professional doctoral program, their expertise can make it challenging for them to employ scholarly thinking in their practice because of their deeply embedded knowledge of the contexts and the success they may have experienced in practice. This challenge makes the intentional fostering of scholarly thinking even more important; thus, curriculum in an online professional doctorate should carefully scaffold the development of researching professionals as scholarly thinkers and simultaneously provide them with multiple opportunities to connect such thinking to their practice.

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Before we discuss how to scaffold the development of scholarly thinking, it is important to identify its processes. Based on our experiences working with over a hundred professional doctoral students and with literature related to doctoral preparation and competence, we chose to focus explicitly on the scaffolding of four processes of scholarly thinking: reading, information literacy, writing, and enculturation.

Although these four processes may be informally scaffolded during on-campus degrees through, for example, hallway conversations, brown-bag lunches, writing groups, meeting with librarians, or a lecture series, curriculum and activities in an online doctorate must purposefully foster these processes. Typically, students demonstrate their prowess in scholarly thinking by completing a dissertation that represents independent researching, thinking, and writing. To set students up for success during the dissertation stage, however, scholarly thinking must be scaffolded throughout the entire program of an online professional doctorate.

SCAFFOLDS TO DEVELOP SCHOLARLY THINKING

We present each of the four processes below and provide examples from the UF EdD EdTech to illustrate how to design an online doctorate to scaffold these processes until they become habits of mind for researching professionals. In practice, of course, these processes are rarely mutually exclusive, and students usually engage simultaneously in more than one process, which is often ideal while developing complex abilities such as scholarly thinking (Walker et al., 2008).

Reading

Reading is a fundamental activity and skill at every level of formal education. Ideally, students enter a professional doctoral program as readers. While this is one of the criteria for admission into our doctoral program, our students typically enter the program reading trade publications that support their views rather than theoretical or empirical work considered important in the academy. The disconnect between the "professional literature genres" that academics and practitioners "count as legitimate academic sources" (San Miguel & Nelson, 2007, p. 82) is one reason to scaffold reading intentionally in an online professional doctorate.

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We designed our program so that students immediately begin identifying problems in their practice and reading about the theoretical underpinnings of the educational technology discipline. However, we have found that students initially struggle to integrate theory and empirical research with their problems of practice, and this experience is supported by the literature (San Miguel & Nelson, 2007). Students are often so engrained in their practice and confident in their understandings of the problems within it that they have difficulty viewing the problems through lenses other than those of gut feelings, prior experiences, and contextual factors. Professionals need multiple opportunities and considerable time to understand that "learning the literature requires far more than simply reading widely, regurgitating key phrases and findings, and genuflecting to seminal researchers" (Golde, 2007, p. 344).

Thus, we emphasize the importance of reading during our on-campus orientation and provide suggestions for how students can begin to develop the reading habits of a researching professional. We emphasize the importance of planning time to read just as one schedules meetings or vacations and identifying places to read that are free of distractions. We also discuss how the digital world has changed reading: for example, RSS (Really Simple Syndication) aggregators enable users to receive immediate updates when articles from certain journals or with certain keywords are published, and mobile devices provide different reading modes and options, including audio reading and the ability to modify font size and line spacing according to personal preference.

We also help students recognize that through processes such as reading, they are developing new identities as researching professionals and that these identities will probably carry over into all aspects of their lives. Barnacle and Mewburn (2010) refer to this as "deterritorialised" learning practice because it involves a loosening up of traditionally conceived spaces for or of learning and raises a student's awareness of learning that takes place in professional practice, in online communities of peers, and in a host of other venues. In addition to emphasizing the importance of carving out dedicated times for reading, we encourage students to identify areas in their lives into which they can integrate reading. We use the example of preparing to write this book. Although we each scheduled time for reading (often early in the morning or late at night), we also worked reading into our busy lives: one of us read in airports, on flights

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to Germany and India, and in cafés and waiting rooms, while the other read in the baseball stands between youth games, in carpool pick-up lines, in waiting rooms at doctor's offices, and while supervising teenagers at a water park. Providing examples of what a scholarly reader looks like is important for students developing their identities as researching professionals (San Miguel & Nelson, 2007). During orientation, we also discuss the importance of developing strategies for active reading, such as note taking, using graphic organizers and mind maps, and highlighting. We have found, much to our surprise, that such strategies for active reading are not a natural part of our students' reading processes, despite having reached the doctoral level. Students have not typically engaged with complex texts as professionals in practice, and many of them either did not learn the skills of scholarly reading in their past academic degrees or lost those skills through the intervening years.

The first formal assignment for students in our program is to identify one problem within their practice and then locate, read, and produce annotated bibliographies for five refereed and empirically based articles related to that problem. This activity is preceded by information-literacy instruction (described in detail below) about search strategies and databases where students can locate such articles. Students then locate five articles related to a chosen problem of practice and produce an annotated bibliography, with each entry comprising a summary of the article, its theoretical perspective, an analysis of how it relates to the problem of practice, and key ideas in the article that they can apply to their problem.

Creating an annotated bibliography helps students understand that they are not alone in facing their problem of practice; they generally find that the problem is present and has been researched across a variety of disciplines and contexts. However, students often choose articles that correspond to their beliefs about the problem, which is why a discussion about article choice and the importance of considering multiple perspectives follows the activity. Furthermore, during this assignment, students often struggle to adopt a critical stance to reading: their tendency is to take what they read at face value instead of integrating it with what they know and have experienced and comparing it with what other literature says (San Miguel & Nelson, 2007).

To help students learn to evaluate literature critically, we have them read a popular article within the field of educational technology and

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analyze it in terms of the claims and evidence it presents. As they conduct additional research on the article, they may find critical commentary suggesting that the article is neither grounded in empirical data nor supported by other research. They may also find that some of the citations are not appropriately or accurately used and that, in fact, the author is an entrepreneur with no background in the discipline and no research expertise. This is when our students begin to realize that published writing cannot be taken at face value and, in some cases, may not be reliable. Throughout the program, students continue to hone their ability to analyze and assess articles through numerous reading assignments.

Our efforts to facilitate the development of the habit and skills of scholarly reading help support students in understanding "what has been done before, the strengths and weaknesses of existing studies, and what they might mean" (Boote & Beile, 2005, p. 3) for the professional contexts in which they work as developing researching professionals. As students undertake the process of becoming scholarly readers, they face serious challenges that surprise them—and that initially surprised us. Most of our students arrive in our program with woefully inadequate information-literacy skills, a lack of understanding about how to curate and cite information, and an inability to synthesize research from academic databases. Such skills are essential for students to develop scholarly thinking abilities.

Information-Literacy Instruction

Students entering an online professional doctorate often have limited familiarity with the electronic resources available in academic institutions because many return to complete a degree after a hiatus from formal education. As a result, their ability to access, find, evaluate, cite, and synthesize research from academic databases varies greatly, although these skills are crucial to their development as scholars and the completion of their dissertations. Information literacy—the ability to locate, evaluate, and effectively use needed information—is a known challenge in traditional doctoral education (Green, 2010), and this challenge is even more pronounced in online professional doctoral education. In a survey conducted with forty-nine incoming online professional students enrolled in two programs in our college, a small proportion of students rated themselves as very experienced in using library resources (17.6%)

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or different databases (18.2%), and almost half (47%) rated their anxiety in searching for literature as high or moderate (Kumar, Ochoa, and Edwards, 2012). Low self-efficacy and anxiety related to information literacy can affect students' knowledge of scholarship in their fields and the quality of their assignments, research proposals, and dissertations (Collins & Veal, 2004; Onwuegbuzie, 1997); therefore, it is important to integrate information-literacy instruction in the online professional doctoral curriculum.

University libraries typically offer excellent services for on-campus students seeking immediate help. While libraries also provide multiple resources on their websites, few online students know that such resources exist or explore these resources unless explicitly instructed to do so. Faculty members, too, are often unaware of the available resources, and they assume that professionals will be able to access and evaluate appropriate literature for their research. It is critical to integrate proper instruction and support about library resources into the orientation and curriculum to help online professional students successfully complete program activities. Information-literacy instruction is typically offered in the form of one-time workshops, online tutorials, and step-by-step guides available as downloadable documents. These resources are most valuable when directly integrated into courses so that students can immediately apply library instruction to assignments (Beile, 2003; Hall, 2008). In the UF EdD EdTech, we have found that a program-integrated approach to information-literacy instruction is effective in increasing information-literacy skills (Kumar & Edwards, 2013; Kumar et al., 2012; Kumar, Heathcock, & Ochoa, 2014). This approach involves the four elements described in detail below, which ensure a planned and tailored approach to information-literacy instruction that is integral to the curriculum as opposed to a just-in-case approach in which information literacy is perceived as an add-on to the curriculum.

Analysis of skills and needs of incoming students. Incoming online students' information-literacy skills and needs can vary depending on their prior academic experiences, familiarity with digital resources, and comfort in the online environment. Since online instruction needs planning and development, information about students' prior experiences with library instruction and the use of library resources and their perceived

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ability and confidence with such resources can greatly contribute to the design of curriculum specific to a particular cohort. Students admitted to the UF EdD EdTech receive a survey to assess their incoming knowledge in these areas and their use of discipline-specific databases so that instruction can be designed accordingly (Kumar et al., 2012; Kumar & Ochoa, 2012).

Designing instruction specific to a cohort. Tutorials and resources on information-literacy skills essential for all online graduate students (e.g., accessing resources from a distance, using the library catalogue) are often available on library websites. In addition to these resources, doctoral students become familiar with discipline-specific databases that they may not have used in prior academic experiences and with citation styles for specific disciplines. Moreover, bibliographic software, often available within university libraries, can be extremely helpful in managing students' reading and producing the citations for a dissertation. It is essential to create online guides or resources that provide instruction in these areas and to ensure that students know how to access them.

In designing additional instruction for a particular cohort entering our online doctoral program, we consider the results of the incoming-needs survey mentioned above. For example, for one UF EdD EdTech cohort, the surveys showed that knowledge of the educational databases widely used in our field was low; therefore, we designed instruction to focus on these databases, and we shared an existing video about searching databases. Identifying essential skills—and adapting curriculum to the needs and incoming knowledge of each cohort of students—can ensure that all professionals in an online doctorate can access and evaluate the research needed for their progress.

The use of documents, videos, Libguides, and similar online resources that students can access at any time from off campus is essential for professionals in an online doctorate. Additionally, synchronous sessions that focus on a specific topic or question-and-answer sessions with a librarian can address the needs of a cohort, and an email help desk or telephone contact can provide support for individual student concerns (Ferguson & Ferguson, 2005; Kontos & Henkel, 2008). In addition to incoming skills surveys, feedback from students on common problems during each semester in the first year of the UF EdD EdTech has been invaluable.

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For example, at the end of the first semester, several students in a particular cohort said that they knew the difference between peer-reviewed and non-peer-reviewed articles, but when they actually found or read an article, they could not determine whether it was peer reviewed. One of our librarians led a synchronous session on specific databases that helped students resolve this challenge.

Integrating an embedded librarian. An embedded librarian in an online course is an effective way to support students and increase information-literacy skills. Using pre- and post-surveys, we found a significant increase in doctoral students' ability to find and evaluate resources from education databases when a librarian was embedded in our online professional doctorate (Kumar & Edwards, 2013; Kumar et al., 2012, 2014). While acknowledging the value of a discipline-specific liaison librarian who acts as a primary contact for online doctoral students (Tunon & Ramirez, 2010), we found that an embedded discipline-specific librarian who provides instruction, designs just-in-time instruction in response to needs that arise, provides support to individual students, and focuses on critical thinking and cognitive processes in information literacy for lifelong learning is essential to the development of scholarly thinking in professionals. Embedded librarians in the UF EdD EdTech collaborate with the program coordinator to understand assignments and challenges that students face in the first year and design information-literacy experiences to help students become independent scholars.

Timing information-literacy instruction in the curriculum. The content of information-literacy instruction will be most useful to students if its delivery is timed appropriately. In the UF EdD EdTech, the embedded librarian introduces existing online resources to incoming students during the orientation. Links to online resources are placed in online modules within courses, and synchronous sessions on relevant topics are timed according to activities in the curriculum. For example, the first time that students are instructed to find peer-reviewed resources, they review online videos; attend a required synchronous session about how to find and evaluate the resources; and, finally, review materials about appropriate documentation of sources. Following the initial assignment, which requires students to identify and critique twenty-five articles, they receive an introduction to bibliographic software that will help them

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curate and cite these articles. The embedded librarian is available in an online help forum to support students with this assignment. We have found that online professional students are far more likely to use an online library help forum than the library help desk.

The previously mentioned four elements of program-integrated information-literacy instruction presume a collaborative relationship between librarians and program leaders in an online professional doctorate. Program leaders must communicate to the librarians the needs of professionals in the specific discipline, the expectations and activities in the curriculum, and the challenges faced by online students. Program leaders must also recognize librarians as information-literacy experts who can contribute in instructional roles within the curriculum. Finally, it is important to regularly assess the information-literacy instruction to determine its effectiveness and identify student needs and challenges.

Writing

Like reading, writing is a key component of doctoral education, but it is one of the most challenging processes for doctoral students across disciplines (Golde, 2007). This challenge is often magnified for those enrolled in professional doctoral programs because many such students have been away from academic writing for many years. In addition, they have difficulty situating their writing at the intersection of theory, research, and practice (Lee et al., 2000), which is more complex than writing in traditional PhD programs, where the intersection typically involves only theory and research. Specific writing challenges for researching professionals include framing their problem of practice as an important research issue; integrating what they know and have experienced with literature; navigating their need to write for both academic and practical purposes and for different audiences; determining how to refer to oneself themselves in their writing, given their embeddedness in the settings (i.e., first or third person); and writing about their contexts and the people within them in ways that are accurate and respectful and that support continued collegial relationships (Chan, Heaton, Swidler, & Wunder, 2013; San Miguel & Nelson, 2007). Although some students are more natural at navigating the complexities of academic writing (Kamler & Thompson, 2006), these complexities, which are magnified by the fact the students are learning to write as researching professionals online

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while embedded in a professional context where academic writing is likely not emphasized, necessitate that students receive multiple and varied opportunities to practice writing throughout the program (Maxwell, 2006; Golde, 2007).

Academic writing is a distinct writing genre, and in our program, we try to unveil its mysteries by dissecting scholarly articles collaboratively with the doctoral students. We also provide writing tips, facilitate writing groups, conduct writing workshops during our on-campus sessions, and provide opportunities to practice academic writing throughout the courses.

Early in the UF EdD EdTech, we have students write in ways that related directly to their beliefs and practice but that also integrate theory and research. For example, we task students with sharing their philosophical and psychological beliefs about the field of educational technology and analyzing how these beliefs play out in their practice. This is the first time many students have examined their beliefs and practice through the lens of theory and research, and the process can create cognitive dissonance when they realize that their beliefs and practice do not align or that they have been practicing their profession without a clear set of beliefs. This process helps prepare students to contextualize their research, which is an important part of research conducted in practice (San Miguel & Nelson, 2007).

To further contextualize their research, during the first year of the UF EdD EdTech, students are required to write about the problem of practice they identified in their annotated bibliography in a way that merges their contexts and problems with theory and empirical research. That is, they explain their problems of practice within their contexts and detail how the problem might play out in different contexts, what it looks like when viewed through different theoretical lenses, and how research has already addressed the problem. They then identify the theories and research that they find most applicable to their contexts and provide reasons to support their choices. Through this assignment, they begin to learn how to frame a problem of practice within the literature, a process that is markedly different from traditional PhD research, in which problems are typically framed based on gaps in the literature (Bourner et al., 2001). Students also begin to learn how "to go about adopting or adapting textual conventions so that one's own, and one's colleagues',

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professional expertise can be reconfigured as legitimate academic knowledge" (San Miguel & Nelson, 2007, p. 71) alongside published literature.

This assignment also helps the students begin the process of learning to write for different audiences. Many professionals write in concise formats such as executive summaries, which serve them well in practice. However, to position themselves as researching professionals within an academic community, they must learn to adopt writing styles appropriate to their disciplines, styles that include more robust explanations and descriptions and explicit connections among theory, research, and practice (Golde, 2007; San Miguel & Nelson, 2007). The annotated bibliography discussed above provides the opportunity to read scholarly articles and is followed by a discussion on disciplinary writing. Students are then tasked with locating and sharing a research article that they would like to emulate and to explain why. We have found that students, as professionals, usually choose articles that explicitly connect theory, research, and practice. Such opportunities help make visible how writing can vary depending on its intended audience.

Later in our doctoral program, students move to more complex writing tasks, such as conducting a literature review focused on a problem of practice (often, but not always, the same problem identified for the annotated bibliography assignment) and developing a conceptual framework by extracting the pieces of theoretical and empirical evidence that are most pertinent to the chosen problem of practice (Kumar & Antonenko, 2014). This conceptual framework is critical for researching professionals because problems of practice rarely fit neatly with one philosophical or psychological perspective, and one context is rarely a replica of another. Thus, researching professionals must critically review theories, prior research, and methodological approaches related to their problem of practice; select from the large body of related scholarship what is most applicable to their problems and contexts; and synthesize this information into a framework that can guide research in their practice.

The complexity of this process cannot be overstated. When the problem is drawn from the student's own professional practice,

> matters such as the problem under investigation, the workplace context, and the positioning of the researcher/practitioner vis-à-vis the research site and participants, may need to be introduced early in the literature review so that the impetus for the

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> research is clearly articulated and the theoretical knowledge is clearly linked to the practice problem that it is meant to illuminate. (San Miguel & Nelson, 2007, pp. 76–77)

The writing activities discussed above are carefully scaffolded to involve multiple drafts focused on various components of the writing process. They also involve opportunities for peer and instructor feedback and for self-reflection in both synchronous and asynchronous formats. While such scaffolds support doctoral students in the academic writing process (Golde, 2007; San Miguel & Nelson, 2007; Wisker, 2015), there is a point at which students must demonstrate their ability "to position themselves as scholars by adopting disciplinarily appropriate ways of establishing and defending knowledge claims" (Barnacle & Mewburn, 2010, p. 434). This opportunity comes during the written component of the qualifying exam process. Sometimes referred to as a rite of passage (Estrem & Lucas, 2003; Hadjioannou, Shelton, Fu, & Dhanarattigannon, 2007), qualifying exams vary greatly across programs but typically involve written and oral components. Our qualifying exams are designed to allow researching professionals to demonstrate their independent scholarly thinking ability in written and oral form, and the previously described writing assignments intentionally scaffold students for success. In our online program, about 90 percent of the students pass on their first attempt and can then advance to the dissertation stage of the program. We believe that this high rate of success is a direct result of the intentionality with which we construct the processes of scholarly thinking throughout the program.

Enculturation

While developing scholarly thinking abilities through reading, information literacy, and writing, our students become enculturated within the larger disciplinary community of educational technology as researching professionals. Enculturation involves legitimate peripheral participation (Lave & Wenger, 1991) and we ensure that students are introduced to the professional organizations, conferences, journals, and other features of the larger community, such as popular listservs and related special interest groups (SIGs). The students spend time exploring these facets of the discipline and are encouraged to participate within the community in simple, low-risk ways, such as attending a conference, submitting

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a proposal for a conference presentation, joining a SIG, or subscribing to a journal. As they come to understand the community, many students begin to participate in more robust ways, including serving as a reviewer for conference proposals, organizing the program for a SIG, or serving on an editorial review board. In fact, two graduates of our program are serving on a committee responsible for rewriting the standards for a major professional organization in our field.

In addition to enculturating into the disciplinary community, professional doctoral students must begin to transform their identity from a practitioner to a researching professional grounded in both their disciplines and their professional contexts. As Barnacle and Mewburn (2010) state, "doing a doctorate changes you," and the change does not "just involve becoming an expert in a topic area, but comprises a transformation of identity" (p. 433). This transformation may challenge professional doctoral students, many of whom have formed strong identities as successful practitioners and leaders within their contexts.

The previously discussed processes associated with scholarly thinking (reading, information literacy, and writing) serve as avenues for helping students transform their identity to that of a researching professional who addresses challenges and problems within the practice through theory and research. The online communities of practice developed by cohorts in our program serve as essential vehicles for this transformation, much of which occurs through noncourse interactions such as online synchronous sessions, on-campus cohort visits, and discussion groups in which students provide and receive peer feedback. Engaging in critical conversations with peers about theory and research related to problems of practice, coupled with providing and receiving feedback related to writing, further develops scholarly thinking, helps students to identify as researching professionals, and enculturates them into the disciplinary norms related to dialogue and discussion.

As Golde (2007) notes, "Careful study of professional education shows the value of pedagogies that require students to perform publicly" (p. 349), and providing and receiving feedback within a safe online community is one example of scholarly thinking becoming public in low-risk ways. Another way in which scholarly thinking, identity formation, and enculturation can be supported through public performance within an online community is through dialogue about articles in the discipline. As

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noted earlier, students can be asked to discuss claims versus evidence in particular articles, but disciplinary writing can also be used to talk about important issues like writer identity and other challenges that professional doctoral students experience. These low-risk public performances within cohort-based online communities of practice are initially led by faculty members, who model disciplinary norms, but gradually, students take over ownership by, for example, structuring their writing groups, hosting synchronous discussion groups, and even driving a couple of hours to meet personally with other cohort members.

KEY CONSIDERATIONS

Scholarly thinking is a habit of mind essential for researching professionals. Helping students develop this habit during an online professional doctorate requires careful planning, in part because those studying in such programs have already developed habits of mind that drive how they address problems in their contexts. For example, we have noticed that students new to our program tend to address problems of practice by talking to people and seeking out resources that support their views and beliefs. Scholarly thinking, in contrast, requires that they seek out information from multiple perspectives and from resources that they have probably not consulted in the past, such as peer-reviewed articles. Since students often have to unlearn habits that are incompatible with scholarly thinking, curriculum must be designed intentionally to foster scholarly thinking, as shown in the following key considerations.

Defining habits of mind. As students enter an online professional doctoral program, faculty members must explicitly define for them the habits of mind they wish students to develop. We believe that scholarly thinking and the associated processes we identified above (reading, developing information literacy, writing, and enculturation) will resonate in many disciplines, but discipline-specific cultures and program goals may warrant different habits of mind.

When we first started our program, we made the mistake of thinking that our students would naturally demonstrate the habits of mind that we expected of researching professionals. When our first cohort went through the qualifying exams, we recognized major differences in how the students performed. Some were natural readers and writers, easily

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figured out how to leverage online resources, and enculturated into the academic community of our discipline with little effort. Others, however, did little more than what was required in coursework and within the online community and were ill-prepared for the qualifying exam process. They struggled to see things through multiple perspectives and were often unable to connect theory, research, and practice in meaningful ways. Our frustration with the range of performances made us realize that it was our fault for not explicitly defining scholarly thinking and emphasizing the need to develop this habit of mind. Only then did we operationalize scholarly thinking in our program. We encourage others to approach this issue with much more forethought during program development and before their first program offering.

Communicating scholarly expectations to students. In addition to encouraging us to define scholarly thinking, the above experience highlighted the importance of explicitly communicating our expectations for scholarly thinking at various points in our curriculum. Students must understand the purpose and ultimate goals of assignments designed to develop scholarly thinking. Otherwise, as adult learning theory and our personal experiences tell us, they may lack the motivation to exert their best efforts, because the work is both time-consuming and mentally challenging. This communication should occur in multiple ways and within every semester of the program, whether formally through coursework, informally through interactions in the online community, or, ideally, both. Students need to be continually reminded of the ultimate goal of developing scholarly thinking and how what they are doing at that moment contributes to that goal.

Scaffolding for scholarly thinking. Moving from simple to more complex opportunities for practice helps build scholarly thinking gradually. These opportunities should be available in multiple courses across the program, since scholarly thinking is not something that can be taught in one course. Furthermore, faculty members must engage and collaborate in the process of scaffolding for scholarly thinking. Faculty in our program find that planning for scaffolding works best when we dedicate time to meeting about the program as a group to plan how scholarly thinking can be integrated across the curriculum and when we are able to make explicit connections among courses for students. For example,

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during the first semester of our program, students take a final exam that includes writing prompts similar to but not as complex as those they will see on their qualifying exams. These prompts ask students to synthesize content from both of the classes they enrolled in during the semester. The final prompt asks them to identify two research questions related to their current areas of interest and to explain why these questions are appropriate given what they have learned about theories and perspectives in our discipline. The prompt serves as a bridge from the foundational knowledge they develop during the first semester of the program and the research design course they will take during the second semester. The instructor for the research design course reads students' responses to these final prompts and begins the course with a discussion of the questions posed by the students and how questions drive research design decisions.

Recognizing the influence of embeddedness on scholarly thinking. It is important to recognize that some students will struggle with scholarly thinking even if program faculty explicitly define it and scaffold for it. We have come to believe that this is often due to the students' embeddedness in their contexts. In most cases, we have found that this embeddedness has the most influence on their ability to develop thoughtful research plans. For example, we have had students work on problems with many possible solutions, both from our perspective and from those of related literature. Yet some students only use literature that supports their viewpoints and solutions—in some cases, manipulating the literature in ways that support their solutions and refute other potential options before those options are carefully tested or even seriously considered. Similarly, we have had students who face tremendous pressure to show positive results related to an intervention in their practice, which sometimes prevents them from being able to think critically about the intervention or about how to best evaluate effectiveness. We do not have a fool-proof plan for addressing these issues when they arise, but we always spend considerable time as colleagues brainstorming possible approaches and we hold multiple conversations with the students about these situations, sometimes including in our conversations the data they have collected in their practice. This can be helpful in developing scholarly thinking, especially when we are able to see these data from different perspectives

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and discuss data that they may have discounted because they did not fit within their personal viewpoints. We find that it is sometimes difficult to determine whether scholarly thinking is adequately demonstrated and how hard and how often to push students on these issues.

Leveraging institutional resources. Scholarly thinking is better supported during an online professional doctorate when institutional resources are leveraged. For example, some institutions have developed writing centres to support online doctoral students, while others have created online modules and resources related to discipline-specific reading opportunities or information-literacy skills. In many cases, employees on campus may already be equipped, or interested in becoming equipped, to support online professional doctoral students. In our own context, our librarians have been very keen to learn about our online professional doctorate and how they can support our students. We have found that engaging with librarians to help them understand the needs of researching professionals and the nuances of learning online can be invaluable, especially when it comes to intentional planning for students to develop scholarly thinking as a habit of mind.

CONCLUSION

Scholarly thinking is a habit or a way of being that permeates how researching professionals navigate the intersection of theory, research, and practice. It involves using the processes of reading, information literacy, writing, and enculturation to study and address problems of practice. Developing scholarly thinking among researching professionals requires intentionality and careful scaffolding in the design of online professional doctoral programs, because students are typically not immersed in professional contexts where such habits are widely practiced. Specifically, it involves coordination among assignments and activities to support a progression from simple to more complex ways of engaging in scholarly thinking. In this chapter, we discussed how students in the UF EdD EdTech move through the carefully sequenced process of identifying a problem of practice, creating an annotated bibliography, participating in a discussion about quality scholarship, conducting a literature review, and crafting a conceptual framework. In addition, developing scholarly thinking requires both collaboration with library staff to meet

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the information-literacy needs of online professional doctoral students and institutional infrastructure for access to online resources that support scholarly thinking. Scholarly thinking as a habit of mind should be emphasized in the design and implementation of online professional doctorates, since it separates researching professionals from other professionals by enabling them to view challenges through various lenses, seeing beyond their own experiences and gut instincts.

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5 Dissertations in the Online Environment

The written dissertation is a relatively new feature of doctoral education. Prior to the early nineteenth century, doctoral degrees were fundamentally teaching licences and were awarded on the basis of a successful oral defence of an idea, or thesis, one that demonstrated a candidate's command of logic. The situation changed after the Prussian philosopher Wilhelm von Humboldt—the founder, in 1810, of the University of Berlin—proposed that doctoral education should place equal stress on research, thereby laying the foundation for doctoral degrees as we know them today (Willis, Inman, & Valenti, 2010). Although different adaptations of Humboldt's model exist in American and European universities, the concept of the dissertation as a culminating experience that prepares graduates for university careers as teachers and researchers has remained relatively consistent; however, as has become apparent, not all doctoral graduates are able to find university positions, nor do they necessarily desire academic careers. Still, students striving for careers outside of academia are often enrolled in the same programs and complete the same types of dissertations as students preparing for academia (Willis et al., 2010).

Efforts are currently underway to differentiate between doctoral degrees designed to prepare professional researchers and those designed to prepare researching professionals, and the types of dissertations completed within these programs have been one of the most challenging

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components of this distinction (Belzer & Ryan, 2013). There is general consensus that dissertations must be equivalent in terms of rigour but different in terms of emphasis and topic (Maxwell, 2009). Many individuals advocate that dissertations completed by those working in practice should focus on a problem within that practice and should result in action-oriented outcomes with a positive influence (Andrews & Grogan, 2005; Archbald, 2008; Shulman et al., 2006). In this way, these dissertations focus on the "now what" rather than the "so what" (Belzer & Ryan, 2013, p. 199) of the research, making it less generalizable beyond a particular context but more relevant within it.

Although there is some consensus about the general attributes of dissertations completed by those in practice, there is less agreement about what these dissertations should look like and how they should be structured. Some advocate for dissertation formats that align closely with what practicing professionals are expected to produce in their careers, such as policy white papers, evaluation reports, curricular materials, or portfolios that explicitly align research and practice (Archbald, 2008; Maxwell, 2009). In fact, a review of professional practice programs affiliated with the Carnegie Project on the Education Doctorate (CPED) revealed varying structures and scaffolds for dissertations, including the following:

- emphasize a stance such as social justice (Professional Doctorate in Educational Leadership [ProDEL], 2012)
- promote a research genre such as action research (Wetzel & Ewbank, 2013),
- complete pieces of the dissertation throughout a program (ProDEL, 2012)
- encompass a team activity, with students making individual and collaborative contributions to a final document
- revolve around a common theme explored by most students (Marsh & Dembo, 2009)
- involve a team-based evaluation conducted for actual clients (Stacy, 2013)

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Quite frankly, the diversity of ways in which dissertations for professionals were structured overwhelmed us as we planned what the dissertation would look like in the UF EdD EdTech. Given the wide range of contexts from which our students come (e.g., K-12 education, higher education, virtual schools, not-for-profit organizations, business, industry, and the military), we knew that many of the dissertation structures we found in our review of professional doctoral programs would not work for such a heterogeneous group. Thus, our first task was to explore our beliefs about dissertations for researching professionals in educational technology and determine how to align the dissertation process with our concept of the trifecta of theory, research, and practice.

Our Conception of Dissertations for Researching Professionals

Although we respect other perspectives on the issue, we believe that the culminating experience for a terminal degree should be an individual activity that the student completes as a final exercise rather than one that runs throughout a program. We also believe that the student, in consultation with faculty (rather than vice versa), should select the topic for and method of the dissertation. These beliefs, however, should not be misinterpreted as the absence of scaffolding, mentoring, and peer support during the dissertation process.

We used these beliefs—coupled with what we learned from examining the dissertation approaches in other programs, studying literature on doctoral programs for professionals, and reviewing the goals for our program—to develop guiding principles for dissertations that align with our conception of the trifecta of theory, research, and practice. We began by developing guiding principles to be used during the dissertation mentoring process. After two iterations of the program, we analyzed the first twenty-three dissertations submitted to determine the extent to which the guiding principles were evident and to explore whether they were working as intended to scaffold the dissertation process (Dawson & Kumar, 2014). In the next section, we discuss each of these guiding principles and provide examples of how each has played out in the dissertations completed by our students.

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Guiding Principles for Dissertations for Researching Professionals

Principle 1: Embed the Dissertation in Practice

The first guiding principle is that the dissertation should be embedded in the student's professional practice. A major goal of professional doctoral programs is for students to influence their local contexts; thus, their dissertations should be focused on issues or problems within their contexts. Dissertations in the UF EdD EdTech tend to fall into one of three categories: directly embedded, indirectly embedded, or unembedded.

For directly embedded dissertations, students study something that is a natural part of their practice. For example, a district-level professional development specialist designed, implemented, and evaluated professional development opportunities related to using technologies that the district had recently purchased, while a university librarian studied her embedded librarian experience in an online course within her unit at her place of employment.

When producing an indirectly embedded dissertation, students study something that is not a natural part of their practice. For example, a school-wide technology director, with the goal of making recommendations about iPad implementation, studied how preschool students in her school used digital scaffolds, and an international centre director, to learn how to support faculty in her centre, designed blended learning modules on intercultural competence for one of the centre's undergraduate courses.

The distinction between directly and indirectly embedded dissertations is associated with whether the dissertation is a natural part of the student's practice. For comparison, one directly embedded dissertation involved an online-learning coordinator for a start-up public health organization interviewing main decision-makers about their perceptions of how the organization should use social media and developing an action plan for the organization based on his data. Determining how to use social media was a job responsibility for this student, and he met this responsibility while simultaneously completing his dissertation. In contrast, an indirectly embedded dissertation involved an advising specialist at a community college interviewing individuals in similar positions at other institutions about how they used technology to support quality

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academic advising. Although this was related to improving the student's practice, the study was not a natural part of her practice.

Most dissertations completed in the UF EdD EdTech can be classified as directly or indirectly embedded, but a few are unembedded. For example, a professional development executive in a for-profit company studied how one of the company's products was used, but his research was not for the purpose of informing his company or improving his work. In another situation, a community college faculty member studied barriers to using games and simulations in teaching but did not focus on her specific context or the community college context.

In general, students whose professional contexts are most closely related to practitioner work (e.g., teachers, professional development specialists) tend to complete directly embedded dissertations. These students seem to have the easiest time conceptualizing a personally relevant problem of practice and a potential solution. For example, a Grade 6 social studies teacher examined a unit involving digital biographies, while an instructor from a small college studied one of her courses.

Students whose professional contexts most closely relate to leadership (e.g., district technology specialist, administrator, centre director) tend to complete indirectly embedded dissertations. In some cases, their problem of practice is best resolved by learning from contexts similar to their own rather than by conducting research in their practice. For example, for the student who studied how other advisers use technology, it would not have been possible to do this in her context because there were no other advisers at her workplace. In other cases, the problem of practice relates to only a small part of the individual's responsibilities. For example, an assistant superintendent studied a district-wide Digital Backpack program, and a nursing professor studied faculty perceptions of ethical behaviour in her college.

Most of the unembedded dissertations are completed by students who work in for-profit settings. In some cases, these students are explicitly denied permission to study within their practice, often because of confidentiality issues. Students who complete unembedded dissertations but do not work in for-profit settings often struggle with identifying problems of practice and/or gaining support for research within their contexts. Other factors also emerge while studying problems of practice: for example, we have had students change jobs in the middle of

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the program; decide they want to leave their practice and thus lack the motivation to study within it; and face leadership and/or visionary changes within their practice during the program. Ideally, all students would complete directly or indirectly embedded dissertations that influence their practice; however, the challenges described above that often result in unembedded dissertations are not unique to our program (Wetzel & Ewbanks, 2013).

Principle 2: Address a Problem of Practice Related to the Discipline

Most doctoral students who are simultaneously working in their profession can identify numerous problems in their practice. However, many of these problems may not relate directly to the discipline they are studying. It is important for students to recognize and study problems aligned with the discipline in which they are earning their degree.

Our students' educational technology dissertations typically address problems of practice that fit into two categories. First, students whose practice is technology oriented tend to study problems related to preparing groups of individuals (e.g., virtual school parents, preservice teachers, K-12 teachers) to use technologies for specific purposes. For example, a director of a virtual school created and studied a parent-training program designed to help parents learn how to navigate an online environment to help their children. Second, students with specific content foci (e.g., art; nursing; international relations; mathematics, science, technology, engineering, and math [STEM]; social studies; physics) tend to design studies using technology as a tool to support teaching and learning in that content area. For example, a centre director used her knowledge of blended learning to design modules to foster intercultural competence among undergraduate business students. Unlike the embeddedness of the dissertations, whether a student is in a practitioner or leadership-oriented role does not seem to influence the category of problems that students identify and study. Instead, the content focus of their role tends to dictate their responsibilities related to technology and thus the problem of practice they choose to study.

Principle 3: Use Literature to Inform the Problem of Practice

We believe that using literature to inform practice distinguishes the approach of a researching professional from that of a typical practitioner.

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Specifically, our students tend to use literature in four ways: to rationalize the problem of practice, to frame the study, to support the design of interventions, and to discuss the implications of the study. Here, we discuss the first three ways, leaving the implications of the study to the last guiding principle.

All students use literature to rationalize the problem of practice, but the extent to which they do so varies. For example, some students have compelling evidence of the problem from their practice (e.g., 80% of teachers in the school report not being comfortable using the new interactive whiteboards, or school officials have just invested money in iPads but are unsure about how to use them to support problem solving). Other students are motivated by a real-world dilemma in their practice. For example, a middle school science teacher was deeply troubled by the number of girls she saw disengaging from STEM disciplines even though they had both interest and aptitude in these areas of study. Thus, she used the extensive literature on both females in STEM disciplines and online mentoring to guide her development of an online mentoring community to support STEM interest in middle school girls. Similarly, the student who wrote the dissertation about using social media in a start-up public health organization rationalized her thesis using the literature on the history and current practices related to social media and public health.

All dissertations use related literature to frame the study. In many cases, this results in what may be considered a traditional literature review (Boote & Beile, 2005). However, in a professional doctorate dissertation, the literature review is also often used to support the design of an intervention. For example, in a dissertation about embedding a librarian in an online course, a student wrote a literature review about the evolution of library support in distance education and the ways in which librarians support online students. In describing the design of her intervention, she drew upon theories in online learning, principles of instructional design, and literature on self-efficacy development in information literacy.

In many cases, content-specific literature is used to support an intervention design. In our dissertations, for example, intervention design has been supported by literature from library instruction and from education in physics, art, STEM, and nursing. In some cases, the literature-based intervention design is included as a separate chapter,

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which is common in dissertations involving professional development or course design. For instance, while designing an online mentoring community to support STEM interest in middle school girls, a student grounded her design in the theory of social constructivism and applied principles from STEM education, online learning communities, mentoring, situated cognition and cognitive apprenticeship, and student-centred learning environments.

Principle 4: Use a Method Appropriate to the Question

Research questions follow naturally from the presented problem and the related literature that frames it, and methods follow logically from the questions. In our view, there is no such thing as inherently appropriate or inappropriate methods for dissertations that researching professionals complete; instead, the question drives the appropriateness of the method. Thus, dissertations that students complete in our program include a variety of methodological approaches, including the interview guide approach (Patton, 2015); the case study (Stake, 1995; Yin, 2009); action research (Dana & Yendol-Hoppey, 2009; Herr & Anderson, 2005); transcendental phenomenology (Moustakas, 1994); qualitative research (Gay, Mills, & Airasian, 2009; Rossman & Rallis, 2012); the CIPP evaluation model (Stufflebeam, 2000); and survey design and hierarchical linear modelling (Raudenbush & Bryk, 2002). Data-collection strategies also vary among our students and have included pre- and post-tests and surveys, observations and field notes, interviews, focus groups, log data, researchers' reflective journals, standardized test scores, and artifact analysis. Likewise, data analysis techniques vary and have included qualitative coding, constant comparison, thematic analysis, content analysis, *t* tests, ANOVAs, multilevel modelling, descriptive statistics, and exploratory factor analysis.

In general, a dissertation that explores a problem of practice directly embedded in a student's professional context (see Guiding Principle 1) often results in more evaluative questions. For example, one student who served as a district-level technology-integration specialist in a system that had recently purchased student-response systems and mobile interactive whiteboards for every secondary core academic classroom was tasked with providing professional development on this new technology. In her dissertation, which related to evaluating this professional development,

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she used Guskey's (1998) five levels of professional development as her conceptual framework. She asked a question related to each level of Guskey's model and used relevant data-collection and analysis methods for each level. She used the results of her study to inform subsequent professional development in her district, and the district now includes more robust evaluation as part of every professional development effort.

Conversely, a dissertation about an indirectly embedded problem of practice is generally less evaluative in nature. For example, a school-level technology-integration director who had recently purchased iPads for her PK-12 campus studied how preschool dyads use digital scaffolds and whether ability groups influence this use. She framed her study using literature about developmentally appropriate practice for preschool children, touch devices, scaffolding, digital scaffolding, ability grouping, and game-based learning. She used descriptive research methods (Knupfer & McLellan, 1996) to answer her research questions and to develop recommended practices for using iPads with young children in the school. Unembedded dissertations tend to be more closely aligned with what may be considered traditional dissertations because they do not stem from a problem of practice but rather from a problem in the literature and because they tend to include larger sample sizes. Given the range of possibilities, our students must understand a variety of methods, and we discuss our strategies for accomplishing this in the "Key Considerations" section below.

Principle 5: Demonstrate Rigour

Criteria for rigour vary depending on the nature of the study, but the criteria that are evident in dissertations completed in our program are transferability, credibility, confirmability, reliability, and validity. Similarly, we realize that students studying within their practice may face workplace-internal barriers, but we think the benefits for improving and transforming local practice outweigh those potential issues. We mentor students to recognize and address any potential issues. First, as part of a campus-based session, a representative from our college's Office of Educational Research speaks to each cohort about the ethics of research. During this time, students ask questions about their situation and receive feedback from faculty and peers. Second, individuals in the local context and at the university must approve the Institutional

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Review Board (IRB) protocol. For practitioners such as teachers, the school principal or the unit department chair must issue approval; for those in administrative positions, approval must come from a person in a supervisory role. For example, a technology director and an assistant superintendent may receive study approval from the principal and the superintendent, respectively. Third, the informed consent (and/or assent) forms included in the IRB process ensure that participants in the research, such as interviewees, are aware of the benefits and risks associated with participation. The IRB also addresses confidentiality and anonymity of participants and makes it clear that participation is voluntary. Fourth, the students must justify the relevance and importance of studying the problem of practice: in other words, it must be a problem that is worthy of asking for participation. Finally, we do not support studies with high-stakes consequences for the participants (e.g., promotion, merit raises, grades). Although our IRB office would probably not support such studies either, we aim to focus our students on improving or transforming their local contexts with what they learn from their study. It is unlikely that high-stakes consequences would accomplish this goal, because effective change is almost always a process.

Principle 6: Include Multi-level Implications for Professional Practice

Because the purpose of our program is to have researching professionals improve their practice through research, students are expected to exhibit reflective thinking by articulating how they expect their dissertation results to influence them personally as researching professionals, the local context, and the discipline as a whole. We use figure 2 to help them visualize the three levels of implications that must be evident in their dissertation.

Our analysis of the first twenty-three dissertations completed in the UF EdD EdTech shows that the more embedded a study is within professional practice, the more likely it is that students will include implications for the local context. Similarly, the more a method supports reflective data collection (i.e., action research versus hierarchical linear modelling), the more likely it is that personal implications will be included (Dawson & Kumar, 2014). Since that analysis, we have made a more conscious effort to ensure that all three types of implications appear in all dissertations.

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Figure 2. Implications to be addressed in dissertations.

KEY CONSIDERATIONS

The dissertation is one of the most challenging aspects of designing and implementing an online professional doctorate. Our approach to addressing this challenge was to learn as much as possible about what others in similar programs were doing and to design a scaffold for writing the dissertation based on this knowledge combined with our experiences and perspectives related to doctoral and online education. We considered rubrics because other programs use them, but although we think rubrics have a place in assessment, our faculty members believe that they may be unnecessarily limiting for dissertations in our program, since our students come from such diverse backgrounds and contexts. Instead, we developed the guiding principles presented in this chapter as our criteria for a successful dissertation process.

These principles are used flexibly to guide dissertation writing, and there are cases (such as the unembedded dissertations discussed earlier) where not all principles can be used. Faculty members in our program also emphasize some principles more than others during their mentoring. For example, some of us place a very high emphasis on the three levels of implications (principle 6), while others put more emphasis on the sophistication of the methods used (principle 3) or the depth of the

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literature used (principle 2). This is not to say that the other principles are sidelined but that principles are operationalized in different ways by different faculty members. Given the individual and intimate nature of the dissertation mentoring process, any scaffolds developed must be flexible enough to give mentors and students autonomy to do what makes sense given the situation and context surrounding the dissertation.

Even though our guiding principles work reasonably well, we frequently find ourselves questioning them. We wonder whether they unnecessarily restrict our students in ways similar to what concerned us about rubrics or whether they are too simplistic. We ponder whether they inhibit ways of thinking that may arise if students and faculty were to discuss dissertation ideas without guiding principles. Even though we still have questions and continue to seek new ideas about the dissertation process in online professional doctorates, after using our dissertation principles with more than forty-five students, we are convinced that they are better than having no structure or guidelines at all. They provide a necessary and flexible structure within which students, mentors, and committee members can conceptualize dissertations that are distinct from but as rigorous as those completed in research doctorates. They also provide a mechanism for consistent communication across the geographic boundaries inherent in online programs and a common language with which to start conversations early in the program about what will be expected during the dissertation process. Furthermore, they serve as a mechanism which we can use to analyze and evaluate what we are currently doing and recognize where issues may arise during the dissertation process. We share some of these considerations next.

Continually analyzing and revising the dissertation process. Systematic analysis of the dissertations completed in our program has resulted in concrete changes to our guiding principles. For example, after analyzing the first twenty-three dissertations completed (Dawson & Kumar, 2014), we realized that our original principle about using literature was far too narrow in its focus on using literature to support the problem of practice. The revised guiding principle encompasses other ways in which students were using literature (i.e., to rationalize the problem, frame the study, and support the design of interventions). Similarly, our original guiding principle about implications was vague, and we noticed that many

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students did not include all three levels of implications (for the student, the context, and the field) in their dissertations. Thus, we modified this guideline to be more explicit. We have found that engaging in a process of continual research and reflection is critical to maintaining consistent and high standards for dissertations and to allow us to continue to question how to improve the dissertation process in our program.

Recognizing the critical junctures associated with the dissertation. Our work with over a hundred professional doctoral students and our continual analysis of both the processes and products associated with dissertations have led us to identify critical junctures in the dissertation process that have been relatively consistent across students and cohorts. These junctures, which are related to our guiding principles, are places where students predictably struggle or lose momentum or both. These are places where students can be encouraged to review previous activities and assignments, where the support of cohort colleagues might be instrumental, and where dissertation mentors can play a key role.

Identifying a topic. Dissertation topics for researching professionals are grounded in their local contexts. This means that they identify their dissertation topic in different ways from many students in research doctorates, whose problems are identified in alignment with their mentor's research agenda or existing grant work. Most professionals in our program can identify at least a dozen problems of practice to study, some of which are not related to educational technology. In most cases, helping students focus on problems related to our discipline is relatively easy once they are reminded to think about their contexts from that perspective (see Guiding Principle 2). But the challenge of identifying a topic does not stop there. Faculty in our program have found that students tend to gravitate toward problems for which they are sure they know the solution (and, in some cases, which they think they have already solved). When students want to focus on such a problem, we remind them that the dissertation is not about proving something and that strong biases prevent researchers from conducting solid inquiries. In some cases, students eventually recognize that every problem has multiple potential solutions and can be seen from multiple perspectives, and the transformation we observe in their thinking during the dissertation stage is quite amazing. But in other cases, we have to encourage students to select another topic

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because we can see that their biases and gut instincts about particular problems will prevent them from producing robust dissertations. Interestingly, it seems that students who have had this struggle also struggled with many of the scaffolds we put in place to support scholarly thinking. These students are so embedded in their contexts and so sure that they know the answers that this confidence prevents them from critically analyzing many issues in their practice.

Other students want to focus on problems that are too big to address within the dissertation, so faculty members stress the idea that research is about precision. Essentially, if a problem is too big and too broad, it will not be solved in a dissertation, which will then contribute little of value to the student's practice, context, or profession. Still other students want to focus on problems for which they do not have enough direct control to make a difference. Students often identify what they perceive to be systematic issues in their contexts, such as poor leadership, inadequate funding or resources, or interpersonal dynamics with adverse effects. Although these are real (and can sometimes be connected to our discipline), they are not problems that can addressed through dissertation work.

Faculty in our program find that dissertation topics with certain characteristics tend to be more likely to lead to successful completion. Students tend to be most successful when they select topics that address problems of practice related to our discipline about which they are passionate but open-minded and for which solutions or outcomes are not already known (i.e., when they are not trying to prove that a solution works). Inquiries that involve gathering multiple perspectives on a problem of practice in order to recommend potential solutions also tend to lead to successful completion. Topics that have a reasonable scope and clear boundaries and over which students have some degree of personal control, such as interventions that they implement or supervise, also tend to lead to successful completion.

Because identifying a dissertation topic with these characteristics is very important and often challenging, students must justify the relevance and importance of their chosen problem of practice to their mentor and committee members through a ten-page prospectus that outlines the nature of the problem, the proposed research questions and methods, the related literature and conceptual framework guiding the study, and the anticipated significance of the results to the local context and the

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discipline. In this prospectus, students also briefly describes any personal and professional biases they have related to the problem. Dissertation work may commence once all committee members approve the topic proposed in the prospectus. For some students, this requires only one submission. Others go through multiple rounds of revision before the committee is comfortable that the student faces a high likelihood of successfully completing the study.

Adapting to changing situations. Many factors can cause students to change their problem of practice before completing their dissertations. For example, some students have changed jobs in the middle of the program, and others have decided to leave their practice and thus were no longer motivated to study within it. We have also had students face leadership, policy, and/or strategic changes within their professional practice that influence the types of problems they can explore. The influence of these changes, regardless of the stage at which they take place during a professional doctorate, can be profound, but they are particularly disruptive when they occur during the dissertation phase. Although we do not have foolproof solutions to these issues, flexibility and empathy, along with the ability to be creative and maintain high standards, is essential when these situations arise.

Selecting and using research methods. Once our students identify a problem of practice on which to focus their dissertation, most of them effectively integrate theory and research to design solutions and/or interventions for that problem. However, many struggle with designing and implementing research to answer questions related to the chosen problem and with evaluating the effectiveness of the solution or intervention. One of the reasons for this is the fact that they receive little opportunity to practice implementing the research strategies they learn during their research courses. They conduct a few small-scale studies in other courses, but there is no guarantee that the methods used will be the same as for the dissertation, and there is no way to simulate the depth of detail and explanation needed in a dissertation. In fact, interviews with faculty from our program and from a similar program in our college revealed that most students do not understand the breadth and depth to which they need to explain their rationale for selecting particular methods, participants, and data-collection and analysis strategies, nor are they able

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to identify their biases or implement strategies for establishing rigour. Although these issues are discussed within coursework, faculty members in our program have come to believe that multiple conversations with mentors and peers and multiple revisions are needed during the dissertation process, given that the dissertation is the first large-scale research project most students have ever undertaken.

Creating a conceptual framework. We have found that aligning the problem of practice, relevant literature, research questions, methods, and implications can challenge students. As noted in previous chapters, faculty members in our program use conceptual frameworks to help students structure all elements of the dissertation study. We define a conceptual framework as "a system of assumptions, expectations, beliefs, theories and concepts that support and inform research" (Kumar & Antonenko, 2014, p. 55). It is unlikely that one theory will encompass the complexity of research in practice; therefore, having students assemble a conceptual framework that is carefully crafted to guide their study has been useful for helping students connect all elements of their study.

Connecting findings to implications. We have also found that students often struggle to transform their findings into useable implications. They typically have little difficulty relating their results to existing literature, but identifying how they relate to practice takes time and mental effort. We believe that there are several reasons for this difficulty, including the fatigue that students are experiencing by the time they write the implications, since they come in the last chapter of the dissertation. Sometimes, they are also working to self- or university-imposed deadlines, which can inhibit creativity and reflective thinking. These difficulties are mitigated by ensuring that the implications of the research for the student and the local context are explicit in the dissertation before the defence. We also highlight the importance of these implications to committee members, who then look for them when reviewing dissertations. Given the purpose of professional dissertations, we feel strongly that implications must be clearly written; ideally, they will result in action that improves the context in which the research was conducted.

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CONCLUSION

We believe that a scaffold or support system is instrumental for ensuring that dissertations are aligned with a program's vision and goals and for increasing the likelihood that completed dissertations are consistently of high quality. In our program, that scaffold consists of the guiding principles that faculty have developed. Students design their research studies according to these principles, and committee members use them to judge the quality of a dissertation. They also provide faculty with a road map to help guide curriculum development toward a culminating experience that aligns with program goals. We developed the guiding principles to reflect our belief that the knowledge, research, and scholarship of researching professionals in a professional doctorate should reflect the trifecta of theory, research, and practice.

Although faculty in our program are always looking for ways to improve our program, we believe that guiding principles provide structure while enabling autonomy and creativity in the dissertation process. Faculty members use the guiding principles to different degrees during the dissertation process: some reference them frequently and others rely on them more when issues arise during the dissertation process. While readers are welcome to use our guiding principles, we encourage program designers to consider a range of scaffolding options to determine what works best in their unique disciplines and contexts.

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6 Online Mentoring

The process of supervising a dissertation has long been founded on the model of an apprenticeship. In this model, the doctoral student is considered an apprentice to the master researcher, or supervisor, whose goal is to teach the student how to conduct research independently and thus become a full-fledged member of the academic community. This model generally entails close cooperation between supervisor and student, who are paired on the basis of shared research interests, with the student working on research projects led by the supervisor and the supervisor creating opportunities for the student to acquire habits of mind essential for research in the discipline. The process often includes student observations of collaborations and academic practices in the research environment and supervisor mentoring of processes, presentations, and writing.

In a professional doctorate, the research occurs in a professional environment located outside the university where the student and supervisor interact. Not only do the research methods used in a professional environment not always correspond to those possible in a university setting, but the student does not have opportunities to learn by apprenticeship or collaboration. An online professional doctorate presents additional challenges. Since students live and conduct research at a distance from the university and the supervisor, both the curriculum and the dissertation supervision must be reconceptualized and the processes structured differently so as to prepare students to be independent researchers. The goal of the dissertation in a professional doctorate

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differs from that of a research doctorate in that the former is expected to contribute contextual knowledge to enhance professional environments rather than advancing knowledge in the discipline as a whole. Nevertheless, the student must still conduct original research, and dissertations continue to be regarded as a means for students to demonstrate the knowledge and skills needed to conduct independent research. How can supervisors mentor students successfully to achieve this goal in an online professional doctorate, when students do not have opportunities to learn from observation, collaboration, and apprenticeship?

In this chapter, we focus on the supervision of dissertations in an online professional doctorate. We prefer to use the term *online mentoring* rather than *online advising and supervision* in acknowledgement of several nonmanagerial aspects of guiding students through the dissertation process. We begin with a quick review of the existing literature on dissertation mentoring, albeit not specific to professional or online doctorates. We then present a framework that addresses the roles and strategies of the mentor, the mentee, and the program or institution, all of which facilitate dissertation completion at a distance. To illustrate and support our suggestions, we have interspersed our experiences and research in the EdD in educational technology at the University of Florida (UF EdD EdTech).

DISSERTATION MENTORING

Traditionally, mentoring constitutes an experienced faculty member serving as a teacher, guide, and role model and providing advice and support to a protégé (Johnson & Huwe, 2003). Some researchers of doctoral education have attempted to differentiate among the terms *supervision*, *advising*, and *mentoring*, but these are interchangeably used in much of the literature to denote a wide range of faculty-student relationships. When differentiated, advising often relates to the management of requirements and emotional and acclimatizing support, while supervising encompasses educating, supporting, and controlling the process to independent research (Kadushin, 1976; Winston & Polkosnik, 1984). We prefer the term *mentoring*, which is learning centred (Zachary, 2002), presumes growth for both the mentee and the mentor, and includes all of the above as well as the navigation of professional growth in a

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discipline. In some dissertation supervision models, roles are fixed, with the supervisor acting more as a manager and director of the dissertation process (Acker, Hill, & Black, 1994). In contrast, we believe that in an online professional doctorate, because students have a wealth of professional experience and a robust understanding of the professional context where research is conducted, roles in the mentoring relationship can be negotiated, and mentoring processes can be collaboratively managed by the mentor and mentee. Our research and experiences in the UF EdD EdTech have revealed that the doctoral mentees assume a proactive role in the management and direction of their learning during the dissertation process; we explain this role in greater detail later in this chapter.

Whether or not the mentee plays an active role, doctoral mentors impart knowledge and skills to their protégés, enculturate them into a discipline, and provide psychosocial support during the dissertation process (Lyons, Scroggins, & Bonham-Rule, 1990). The doctoral mentoring process and relationship have been determined to be the most important factors in the completion of doctoral dissertations (Hayes & Koro-Ljungberg, 2011; Ives & Rowley, 2005; Paglis, Green, & Bauer, 2006; Tenenbaum, Crosby, & Gliner, 2001). Researchers agree that doctoral mentoring comprises three major areas: educational development, professional development, and psychosocial development. Educational development factors pertain to structured, institution-specific, and general advice on academic program planning; formal and informal teaching for the acquisition of knowledge and skills needed for independent research; and sponsoring and providing opportunities to develop academically. Professional development consists of the provision of structured, institution-specific, and general advice on the discipline and behaviour expected in the academy; access to resources and networks; and opportunities for research, professional development, and collaborations. Psychosocial development refers to the emotional and social support necessary for the mentee's academic and professional development, role modelling, and encouragement of self-reflection on personal strengths and weaknesses during academic development (Crisp & Cruz, 2009; Hayes & Koro-Ljungberg, 2011; Lechuga, 2011).

Doctoral mentors need to encompass six dimensions: relationships, information, facilitation, confrontation, role modelling, and career planning (Cohen, 1995). Specifically, research about dissertation mentoring

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has found the following to be characteristic of successful mentoring: a focus on relationship development, clear and honest communication (Ives & Rowley, 2005; Rose, 2003); research-related pedagogy for designing, conducting, and documenting research (Manathunga, 2007); frequent meetings and feedback on written submissions (Heath, 2002); motivation and guidance for career development, and the building of self-confidence (Wisker, 2015). How does a faculty member fulfill all of the different responsibilities of a dissertation mentor when they cannot meet with the mentee in person, may be in different time zones, and must communicate through various technologies in which tone of voice or body language may be missing during communication? Additionally, how can a dissertation mentor successfully guide professional students to conduct dissertations in their professional environments at a distance from the university? We attempt to address these questions in this chapter. Our approach to the online professional doctorate presumes a research-relation orientation rather than a research-practice orientation (Franke & Arvidsson, 2011): that is, we assume that the doctoral student chooses the research problem and project and that, in many cases, the doctoral student does not share the research agenda of the mentor or work as an apprentice to the mentor. Furthermore, because the doctoral students conduct research in their own professional contexts, they often have more contextual and specialized knowledge than their mentors. Although our approach presumes the formation of community and peer support among students and research preparation before admission to candidacy, the strategies we propose in this chapter are valuable for all mentors and students engaged in dissertation mentoring in blended or online environments.

ONLINE MENTORING

Hamilton and Scandura (2003) define the terms *e-mentoring* or *virtual mentoring* as "the process of using electronic means as the primary channel of communication between mentors and protégés" (p. 388). They explain this to be the virtual continuation of a mentor-protégé relationship that is created face to face or electronically. In our program, the mentor-protégé relationship is created online and continues mainly through various online media; therefore, we use the term *online*

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mentoring. Some of the challenges of online mentoring are isolation due to lack of communication, miscommunication due to the textual nature of online communication, difficulties establishing trust online, technical problems, and insufficient competence in online communication on the part of the mentor or mentee (Ensher, Heun, & Blanchard, 2003).

According to the literature, success in bridging transactional distance through communication and interactions is associated with a blended, learner-centred approach to online mentoring, in which mentors use multiple technologies and activities to develop student trust, facilitate community building, communicate frequently, and foster learner progress (Ensher & Murphy, 2007; Headlam-Wells, Gosland, & Craig, 2005; Schichtel, 2010). Such an approach, according to Schichtel (2010), requires that online mentors possess the following seven competencies:

- online developmental competence that addresses educational development, professional development, and psychosocial development
- social competence that projects personality, social presence, and community in the online environment and overcomes challenges related to distance, time, and lack of social signals
- cognitive competence that fosters critical analysis and reflective practice
- teaching competence that facilitates educational and professional development
- communicative competence to conduct effective communication in the online environment through flexibility in choices of technological mediation for both synchronous and asynchronous interactions
- managerial competence that sets expectations related to the administration and organization of mentoring
- online technical competence that facilitates mentee adaptation to the online environment and technologies

Horvath, Wasko, and Bradley (2008) further emphasize that a competent online mentor should be able to ascertain how much involvement and contact the mentee desires and to support the mentee accordingly.

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Regarding online feedback, the best practices identified in the literature include the setting of expectations about time management, online availability, and "constructive, timely, clear and comprehensive feedback" (Schichtel, 2010, p. 254).

ONLINE DISSERTATION MENTORING IN A PROFESSIONAL DOCTORATE

While acknowledging and emphasizing the key role of the mentor-mentee relationship in online mentoring, we propose a framework for online mentoring of dissertations that highlights the roles of the mentor, the mentee, and the program or institution. As we discussed in previous chapters of this book, online teaching and learning require structures and processes to be in place in online courses and programs, and online learners must take an active role in the organization and management of their learning. Faculty presence, learning presence, and social presence are necessary during all stages of an online professional doctorate. In the following sections, therefore, we describe not only the strategies that a mentor can use but also, based on data from graduates of our program, those that are useful for mentees. We believe that at every stage in an online doctorate, the teacher, or mentor, and the learner, or mentee, function within a larger system of support. Within a cohort model, academic peers are a strong source of support in an online professional doctorate, as are colleagues, or professional peers. Additionally, the online program or institution must provide administrative and other forms of support, which we discuss at the end of this chapter.

STRATEGIES FOR MENTORS

Choosing and Using Appropriate Technologies for Online Mentoring

The use of both synchronous and asynchronous communication via multiple media has been successful in our experiences of mentoring doctoral students, and the students in our research have appreciated these interactions (Kumar et al., 2013). Students in our program have preferred to meet regularly with their mentors using online synchronous communication. A combination of email; group discussions; phone meetings; teleconferences; Web-based synchronous meetings using Adobe Connect,

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Cisco Webex, Skype, Zoom, or Google Hangout; and, if possible, occasional face-to-face meetings works well for dissertation mentoring. The following statement by a faculty member reflects the approach of all faculty mentors interviewed about mentoring in our program:

> I kind of use whatever the students want to use. We've used everything from Skype to Google Hangout, email, the good old-fashioned telephone. To me, the technology is kind of inconsequential. I don't really care what it is as long as it gives me synchronous reliable access. Some students really like the Google Hangout, because they like to see me and my facial expressions. Sometimes the phone is better for me, just because I can do it anywhere. I kind of just go with whatever makes them feel the most comfortable. (Spring 2012)

Technologies must be carefully chosen based on the purpose of mentoring communication. Asynchronous feedback on written work in the form of comments and tracked changes in a Microsoft Word document or audio comments in Adobe Acrobat, the use of a Google Doc to provide feedback on ideas and milestone management, and emails structuring the process are all valuable. Students in our program have greatly appreciated asynchronous feedback immediately followed by synchronous feedback. We recommend scheduling a synchronous meeting on the phone or in a virtual meeting space such as Zoom when a student receives feedback on a written draft because it sets a deadline for reading the feedback and enables the student to clarify questions about it. Faculty mentors have also found such conversations useful for resolving misunderstandings that may arise from the lack of tone of voice or body language in asynchronous communication and to provide further examples or explanations for their feedback. Whether to schedule a meeting so that it coincides with the student's receipt of an annotated draft or takes place after the student has had an opportunity to review the feedback may simply be a matter of personal preference, but the decision may also hinge on the nature of the feedback itself. For example, during an interview conducted in the spring of 2015, one faculty mentor explained why, after tracking changes and adding comments in a Word document and writing a summary of her assessment, she chose to share her feedback with the student only at the time of the meeting: "Particularly if there is a lot of work to be done, I want them to hear me talk them through it

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rather than try to make sense of it on their own first, so that they don't feel overwhelmed or uncertain about what I mean about things—because I think that would heighten stress and anxiety." Another faculty mentor has found it more valuable to schedule a synchronous meeting at least a day after a student receives feedback, instructing the student to bring questions and concerns to the meeting so that they can discuss the changes and decide how to move forward.

In terms of management of the process and documentation of student progress, both faculty and students can document synchronous discussions online. One faculty member in our program requires students to write a brief summary of topics discussed and action items after every meeting. These summaries are stored in Google Docs, where students and mentors can access them. Another faculty member takes notes during meetings and maintains a document containing them for each student.

Screen sharing during a synchronous session is useful for feedback at any point in the dissertation phase, but it can be especially valuable during the data analysis process. Students can share their screens with their mentors and peers to demonstrate how they are analyzing their quantitative data and to discuss their results. If their research is qualitative, they can share their codebooks and highlight the pieces of text attached to their codes. These processes can enhance the mentoring of research and decrease isolation during the research process. During an interview, one student in our program found screen sharing to be invaluable to her data analysis:

> At one point, we connected through CrossLoop so he [the mentor] could show me the process of how to do data analysis. . . . I could dial into his computer. And so his screen would appear on my computer screen, and I could watch what he was doing. I had a pretty complicated data analysis, and actually struggled with that. And so he was showing me on his screen how to use the software. (Spring 2013)

Other software is useful for administrative purposes during the dissertation process. Polling software such as Doodle is useful for scheduling meetings within research groups and committees, and virtual classrooms provide a platform in which a committee can break out into a separate room for discussion while the student is in the main classroom. Faculty

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mentors in online professional doctorates, therefore, must be competent using several technologies, but more importantly, they must be able to communicate effectively online and manage the online environment. Mentors usually choose and use technologies based on their preferences, but faculty members in our program have highlighted the need to be flexible so they can accommodate the online communication and technical abilities of students.

Students must be comfortable using technology to communicate with their mentors so that they can focus on the content of the communication without being distracted by technical issues. Although this was not a consideration in our online professional doctorate in educational technology because students are generally comfortable using online technologies when they enter the program, it can play an important role in other online professional doctorates.

Providing Structure

Given their family and work commitments, students in our program have found mentor-initiated contact, set deadlines and deliverables, clear expectations, and the mentor's structuring of peer interaction extremely useful (Kumar et al., 2013). Mentors, likewise, have found that providing structure for students is critical to student progress, mainly because students are not on campus or surrounded by the culture of academia. They reflected that students who work full-time and write their dissertation at a distance have to "find their way" and that managing time and reading drafts is ameliorated if the mentors structure the process for students and hold them accountable to deadlines and deliverables (Kumar & Johnson, 2017). A key strategy that four of our six faculty members have used to structure the dissertation process is to mentor their mentees as a group.

Ideally, online small-group mentoring would work similarly to a research group, in which peers work on common projects or projects that are different facets of a whole. In an online professional doctorate in which each mentee conducts research in his or her professional environment, small-group mentoring serves multiple purposes: it provides peer support for mentees who are at the same stage of the dissertation process, acquisition of research skills and critical thinking relevant to dissertations, and accountability to the mentor and peers. Each faculty member in our

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program has approached online small-group mentoring differently. One has mainly used asynchronous communication to structure peer collaboration, the brainstorming and reporting of ideas, reading of drafts, and constructive feedback, while working individually with each student in the group. Another created a structured group-mentoring environment using regular online synchronous sessions, providing feedback to the group as a whole, modelling constructive criticism, and encouraging peer feedback before receiving any written work (Kumar & Johnson, 2017). During the initial stages of defining the research question and writing the proposal, these practices are an effective use of faculty time because students often need clarity on the content and tone of dissertation chapters as well as with process or format. Mentors did not need to repeat the same advice to all students; they could provide feedback to one student within the group environment and ask the others to reflect on their work or make changes while discussing it.

Students in our program have valued small-group mentoring; during interviews, they said that it kept them on track, provided opportunities to partner with peers, and facilitated the completion of their dissertations. One student stated,

> We had to get together at set nights on Elluminate [software] and share our chapters as they were coming along with each other and do mini presentations. And then we'd critique each other. And then at the end, she [the mentor] would provide some further feedback. . . . I had already known the people in my group anyway from a couple of years of coursework. I felt very comfortable emailing them offline for suggestions. We'd read each other's papers. So the small-group cohort was really, really effective in terms of helping to get the work moving. (Spring 2012)

Moreover, students are motivated to move forward together and do not rely solely on the mentor for support. After this peer practice is established, they continue to support each other even when the mentor no longer structures opportunities for that support. After students have collected data and are writing their findings, group meetings are useful for receiving different perspectives, but individual faculty mentoring is still essential for students to receive online feedback specific to their dissertation and progress.

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Providing Online Feedback and Support

All doctoral students struggle with writing a document as large as the dissertation because they have never done it before and because it usually represents their first independent research endeavour. Although the process itself can be intimidating, the manner in which students handle the feedback they receive influences their progress, and how faculty provide feedback when they are not physically present can also influence student motivation to continue in an online doctorate (Kumar & Johnson, 2014). A student in our program described her dissertation process as the first time she had ever received such extensive feedback and said that it was difficult to continue writing immediately after receiving comments and criticism. Moreover, mentors in our program have found it challenging to give feedback on a dissertation in the absence of body language, eye contact, and tone of voice, although they are used to providing such feedback on course papers and projects. One faculty mentor likened dissertation feedback to the editorial process in an interview, stating that "it is sometimes just really helpful to sit down with a piece of narrative and write it with the student, show them exactly what you are talking about." He reflected that in the online environment, he found it challenging to show students how to write without editing their text for them. On-campus students can meet with a mentor to review written dissertation chapters and feedback, which gives both mentors and mentees a chance to clarify feedback, but in an online doctorate, mentors must be more explicit in their written feedback and must ensure that they meet virtually with their mentees to discuss such feedback.

All of the graduates whom we have interviewed about the dissertation process reported that they appreciated explicit, specific, and honest feedback on their dissertation drafts. Many stated that although they initially found feedback difficult to handle, it helped them move forward and understand what was expected; it contributed to the overall quality of the dissertation, and similar feedback would help them if they were to publish in the future. Students appreciated their mentors' encouragement and positive reinforcement; questions instead of criticism; and provision of additional resources, research, or literature. Given their inability to ask questions and take notes in person, students appreciated clear feedback and the ability to connect with their mentors (Kumar et al., 2013).

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In addition to candour, timeliness emerged as an important aspect of feedback. Given their professional and personal commitments, online professional students appreciate the establishment of specific dates for draft submission, the provision of feedback, and discussion of the feedback. During interviews, a faculty member reflected that when working with multiple students, this helped her allot time for the reading of drafts. Moreover, it made students accountable, since they were required to inform her of any delays in submissions and revisions to their timelines. She believed it was also easier for her professional students to plan their time if she set a timeline for receipt of her feedback.

Clear expectations and accountability on both sides are valuable for dissertation completion. Both mentors and mentees can renegotiate deadlines if they are unable to meet deadlines upon which they had previously agreed. Although it is important that mentors initiate such timelines, this is a process that both mentors and mentees must manage together.

As a first step in the dissertation process, students review our scholarship on the guiding principles for dissertations in our online professional doctorate (Dawson & Kumar, 2014). Based on the positive results of this requirement, we recommend that others designing and implementing similar programs identify and communicate the essential elements of dissertations and the attendant student expectations. Activities involving reviewing dissertations in the discipline and understanding their components should be built into the online curriculum. Additionally, during the dissertation stage, faculty in our program have found that it is important for students to review work that uses a similar research design or methodology or that addresses similar research questions. Given the unique needs of professional contexts and professional dissertations, it is critical that students analyze and discuss how the various components of a dissertation fit together.

In a new online professional doctorate, finding appropriate dissertations and achieving clarity with respect to what constitutes a dissertation can be a challenge, as it was for our faculty when mentoring the first cohort of students. However, they were able to identify excellent PhD dissertations in or outside our institution, along with specific chapters that were useful as models. For instance, if a student was using a certain methodological framework, the third chapter of other dissertations that

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used that framework was shared with that student. In later cohorts, it was possible for faculty mentors to provide sample dissertations completed within our program and to connect mentees with prior graduates who had used a certain methodology or worked in a similar context. This connection of mentees with previous students who have successfully graduated can be extremely useful in an online doctorate.

Given the various commitments in their busy lives, the biggest challenge faced by students in our program is time management. They find it difficult to find time to write, to focus on writing when they do find short periods of time to do so, to stay motivated when writing in isolation, and to balance writing with their other priorities. For example, one student held a job in which 80 percent of his time was spent travelling; he had to do much of his writing on a plane without access to online resources. Another student shared her frustrations not being able to write, stating, "Children follow me around the house, going, 'mommy, mommy, mommy.' Mommy has to write" (Kumar & Johnson, 2014).

Mentors in a professional doctorate must be flexible and understanding of the commitments that compete for professional students' time. This often means meeting with students in the evenings or on weekends and accommodating various time zones. Mentors in our program have consistently emphasized the need to be sensitive to students' schedules; accommodate their needs; and offer reassurance, guidance, support, and encouragement (Kumar & Johnson, 2017). Some faculty members give students their cell phone numbers, and others make it clear that students should immediately send an email if they need to vent or are struggling with the process. Building a distance relationship that respects boundaries but also encourages students to trust their mentor with their struggles and doubts is difficult but possible. Responding immediately, providing reassurance, and helping students establish priorities at different times is important. Faculty have reported struggling with the challenge of when to give students direct advice and when to let them figure it out for themselves. Students in our program have stated that the most important lesson they learned in such situations is that priorities can change, and it is important to make an informed choice each time they do. Family, for example, may take precedence in a certain situation, while writing may be a priority in another (Coughlin et al., 2012).

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In addition to work-life situations that influence professional students' ability to write, students in an online professional doctorate can face challenges with data collection at their workplace and with changes in initiatives and approval for research. Furthermore, given their distance from the university, they often do not know their committee members as well as on-campus students do (Kumar & Johnson, 2014). Mentors play a significant role in helping professional students navigate these challenges.

STRATEGIES FOR MENTEES

In addition to strategies for mentors, our research has highlighted useful strategies that students can use during the dissertation stage of an online professional doctorate. These strategies, which stem from our students' insights and suggestions, have been valuable to later students in fostering a smooth dissertation process and effective online mentoring.

Establishing Open and Consistent Communication with Mentors

Students in our program have stated that it is important to establish early, open, and consistent mentor communication; they have provided examples of how this communication helped them in numerous situations in which the mentor reassured or advised them, or suggested alternatives to their problems. They found it important to use multiple modes of communication such as email, phone, and Skype for various situations, but they also suggested that mentees identify the modes of communication with which mentors are most comfortable and to use those means when possible. Finally, they found that asking for clarification immediately when something was unclear prevented misunderstandings that could cause further problems (Kumar et al., 2013).

Being Proactive and Taking the Initiative

Students in the UF EdD EdTech have found it important to take ownership for communication, deadlines, and feedback during the dissertation process. They proposed that mentees should take the initiative in establishing contact with mentors, setting deadlines for drafts and feedback, and arranging meeting dates (Kumar et al., 2013). They believed that this helped to structure writing and communications with mentors and to finish a dissertation on time. Waiting for a mentor to provide structure

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or deadlines can lead to significant delays in the online environment, where mentees do not have an opportunity to meet the mentors in any other context. Notwithstanding the value of good relationships with mentors, according to students, creating deadlines for oneself, planning, and staying on top of things was paramount in finishing their dissertations.

According to student feedback, when problems arise regarding data collection or analysis or life events, it is important for the student to immediately reach out to the mentor or other committee members and seek advice. Online students may hesitate to reach out, which impedes the dissertation process. Most importantly, students suggested that mentor feedback about writing be implemented immediately while the ideas are fresh and familiar to both the mentor and mentee.

Supporting Peers and Seeking Support from Others

As already noted, it is difficult for online professional students to stay motivated, and several of the students interviewed felt disconnected from academic work because of their professional and personal commitments. Consistent communication with peers, with others in their disciplines, and with people who have completed a doctorate and understand the rigours of the dissertation process is valuable for the completion of a dissertation. Peer support should be structured during the initial stages of an online professional doctorate (for instance, by using activities within a cohort model) so that a support network already exists within the program when students reach the dissertation stage. Given the unique nature of doctoral studies and the challenges of writing a dissertation, others experiencing the same process—in addition to family, friends, and significant others—can be valuable sources of support. Encouragement and cheerleading within a larger cohort and the reading of drafts and provision of feedback within smaller peer groups clearly motivated students in our program, helping them with their writing and research and contributing to the completion of their dissertations. Students suggested that if peer support is difficult or absent, professional students can identify and collaborate with colleagues or friends in their work environments who held terminal degrees or are in similar situations (Kumar et al., 2013). Reaching out to peers and reciprocal reading of drafts can reduce isolation and facilitate the process.

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Participation in a community with common goals can increase students' retention and motivation and can help them complete a dissertation. Mentors are crucial during the dissertation stage, but peers also assume a key role, and both function within a larger system of support that is provided by the institution and designed as part of a program. In our model for a professional doctorate, the cohort model is implemented and communities are formed in the initial years to maximize retention during all stages of the doctorate, especially the dissertation.

An institutional climate characterized by student integration and peer support has been found to decrease the time taken to complete a degree or program (de Valero, 2001; Lovitts & Nelson, 2000). Online professional students must connect to their institution and peers via colloquia or webinars that inform them about research procedures; events where peers and faculty members share research; and other opportunities related to academic, career, and researcher development. Doctoral cohorts that have already created close relationships in the first stages of the professional doctorate can network, motivate, and help each other during the dissertation stage. Doctoral students in the natural sciences often have opportunities to engage with each other in laboratories and through research projects during this stage, but in the social sciences, students are often left to their own devices. Some institutions attempt to create intellectual communities through on-campus workshops involving faculty members and their students (Nerad & Miller, 1997); in an online program, it is possible to hold virtual meetings at a departmental or school level that function in the same way. Students can share their research and events in their disciplines, critique and support each other's work, and share resources. Virtual meetings can be offered throughout a doctoral program and not just during the extremely important dissertation stage.

In terms of infrastructure, doctoral support centres can provide consistent and equitable support not just for on-campus students but also for online doctoral students. West and Gokalp (2011) describe such centres as addressing social isolation in a doctoral program from an institutional or administrative perspective and helping professional students to make a faster transition to dissertation work and to complete their dissertations more quickly. Ideally, all aspects of an online professional

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doctorate should build up to and culminate in the dissertation process; this includes not only the activities that facilitate scholarly thinking and community building but also the practical processes and content useful to the dissertation process. Specific topics that have been successfully addressed throughout the UF EdD EdTech, thus helping students during the dissertation stage, are information literacy, research ethics and the Institutional Research Board (IRB) process, areas of writing with which students struggle, and bibliographic tools that help students manage their references.

In addition to activities, meetings, and support groups, the provision of research infrastructure for online students is essential. For example, in our online professional doctorate, initial online students did not have access to research software such as SAS or SPSS, which was available to on-campus students. Student versions of such software became available to the second cohort, which made it much easier for the students to acquire research skills and for faculty members to guide them during data analysis in their research. Most universities provide software services to on-campus students, but they might not have processes in place for online students to access these services.

KEY CONSIDERATIONS

Online mentoring at the dissertation stage in our model for the online professional doctorate is preceded by coursework and activities that scaffold scholarly thinking and facilitate the building of a community of researching professionals. The goal of such scaffolding is to ensure a foundational connection of theory, practice, and research in the doctorate and to build a system of support for researching professionals working on their dissertations at a distance from the university. Activities throughout the curriculum should be structured with the end goal of the dissertation in mind. We discuss some considerations in this section that play a role in the online mentoring of students during the dissertation stage.

Assigning mentors and mentees. Our model for the online professional doctorate presumes that the dissertation focuses on a problem or topic in the mentee's professional environment and that the research is conducted to improve this environment. This scenario can be difficult for a faculty member who is accustomed to mentoring students doing research

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in experimental or university settings and who may have to mentor a professional who is implementing research in a context with which the mentor has little experience. To the best extent possible, assigning mentees to mentors who have expertise in their areas of specialization, their specific research interests and/or professional contexts, or the types of research methods the mentees will use can greatly reduce tensions, which is critical given that the mentor-mentee relationship during the dissertation stage greatly contributes to the mentee's satisfaction and support. In this regard, mentors must understand the goal of a dissertation in the online professional doctorate and be familiar with the guiding principles to help students select dissertation topics that have an appropriate scope and will make a difference in their professional contexts.

Mentor workloads also influence the assignment of mentees to mentors, who often find it challenging to mentor multiple dissertations in addition to research, service, and teaching. The challenges are even greater when mentees are located at a distance from the university. Moreover, when professionals move through an online doctorate as a cohort, the number of students preparing a dissertation proposal or writing the final dissertation at the same time is larger. Those organizing programs that require mentors to work with multiple students at one time may need to discuss plans with university administrators in order to secure additional supports for a mentor with a significant increase in workload.

Developing mentors. As discussed above, the mentor is expected to provide structure, sample dissertations, feedback, and psychosocial support, and to choose appropriate technologies for online mentoring. Communicating to mentors the types of strategies that are valuable in an online environment and ensuring that they possess the necessary competencies can facilitate a smooth mentoring process during the dissertation. Lee (2008) states that dissertation supervisors' experiences as doctoral students and their concept of supervision influence how they supervise or mentor. Regardless of those experiences, which most likely took place in a traditional on-campus doctorate, all faculty in an online professional doctorate should understand the goals of the doctorate, the types of research conducted, the guiding principles of dissertations, and the types of support that researching professionals need. Although these may be similar to their experiences as a doctoral student or as mentors

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of on-campus doctoral students, they should be aware of the unique nature of the online professional doctorate and the needs and challenges of nontraditional students working on their dissertations at a distance from the university (Kumar & Johnson, 2014). It is advantageous to create opportunities for sharing strategies among faculty members who mentor in an online professional doctorate as a means to support those who may lack previous experience with online mentoring or with the mentoring of professional dissertations.

Developing mentees. Professionals in an online doctorate may not always perceive themselves as responsible for their success during the dissertation stage and, in fact, throughout their doctoral studies. Despite being professionals and experts in their professional environments, based on their experiences as undergraduates or master's degree students, they may revert to expecting their mentors to take charge of the process or tell them what to do, especially in the online environment, where they do not see their mentors. An outline of the mentee's role and responsibilities should be given to students at the beginning of the dissertation stage. In the UF EdD EdTech program, students are given material to read before being assigned to a mentor who then outlines how they prefer to work with mentees. Finally, students are connected with graduates or those already writing their dissertation to understand how to best manage the process. Being aware of strategies that have worked for others and accepting responsibility for their progress can go a long way in students' successful completion of dissertations.

While not a challenge faced in our program because of the technical competencies of students, mentees in other online professional doctorates might lack the technical, social, communication, and managerial competencies (Schichtel, 2010) needed to succeed in the online environment. In another online professional doctorate offered at our institution, students were comfortable using the learning management system used for coursework, but some were less familiar with other technologies and therefore preferred to use the telephone to communicate with their mentors during the dissertation phase. Although it is important for a program and/or mentors to adapt to the need of students and use the technologies familiar to them, guidance on how to use technologies during online mentoring could also be provided to mentees.

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Sharing mentoring. In an online professional doctorate such as the UF EdD EdTech, students have the opportunity to work with and get to know multiple faculty members online, after meeting them during initial on-campus summer sessions. This is important because students need exposure to different ways of thinking, providing feedback, and communicating. Often, faculty mentors suggest that a student consult another faculty member about an area of research or research method. We have found that humility among faculty members and a learner-centred approach while crafting a dissertation committee or communicating resources can reduce frustration and help online students who are not on campus and may not always understand the relationships or problems that exist between faculty members.

Furthermore, requirements of dissertation committees and the interdisciplinary nature of professional dissertations often involve faculty members from other disciplines, research orientations, or departments. It is important to communicate the purpose of the online professional doctorate and the guiding principles of dissertations to committee members to ensure that they all work toward the same goal. In the UF EdD EdTech, we require students to share with the committee a prospectus in which they justify the need for their research, provide supporting literature, and briefly describe their proposed research design. This ensures that all committee members understand the purpose of the dissertation, approve of the general research proposed, and have the opportunity to provide feedback at an early stage.

Asking for support. Professionals completing their dissertations at a distance from the university are often hesitant to reach out to peers or others who are experts and ask for advice about their research or writing. We have described the cohort model, institutional support, and small-group mentoring as strategies that help to create a community to alleviate this problem. At the same time, emphasizing and modelling throughout an online professional doctorate the importance of input from others both within and outside the university can help professionals learn to request and receive feedback. Social media, professional organizations, and others who have completed professional doctorates can also be helpful in the dissertation process.

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CONCLUSION

The move from traditional on-campus apprenticeship models of dissertation mentoring to the online mentoring of dissertations in the absence of a common research practice between the mentor and mentee requires rethinking the roles of the mentor, the mentee, and the institution. Mentors have to adapt to mentoring professionals who may have little or no prior research experience in the online environment, and mentees have to learn to assimilate and implement feedback and trust the experience and advice of the mentor. In this chapter, we discussed the technologies and strategies used by mentors that have helped students in our program succeed during the dissertation phase. Our research shows that the use of timelines, structure, synchronous feedback, and small-group mentoring are especially valuable to professional students in the online environment. While often not considered an important factor in dissertation mentoring in traditional doctoral programs with on-campus support services, the role played by the program and institution assumes greater importance in an online professional doctorate. A cohort model that facilitates community and scholarly thinking and emphasizes the mentee's role and strategies in the online environment during the early stages of a program can contribute to peer support and mentee accountability during the dissertation stage. Likewise, infrastructure, services, and opportunities that are designed and offered to support online students conducting research at a distance from the university are essential to student retention and successful dissertation completion.

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PART III

Ensuring and Evaluating Quality

7 Maintaining the Quality of an Online Professional Doctorate

Despite the increased number of online programs in the United States and the developments in online communication technologies that have improved online teaching and learning over the last two decades, online education is still viewed with skepticism and as a lesser alternative to on-campus education at institutions of higher education. Early research and efforts to measure the quality of online education have often focused on comparing online offerings to on-campus offerings and have attempted to establish that the quality of the former is equivalent to that of the latter (Phipps & Merisotis, 1999; Thompson & Irele, 2007). An underlying assumption of these efforts is that existing on-campus programs are of the highest quality. Based on our experience, we contend that online programs are different from on-campus programs and must, therefore, be designed, implemented, and evaluated differently. Online programs must be designed, developed, and ready for use before students access course materials, so instructional design and quality-control processes must be in place before a course begins, which is not often the case with on-campus offerings. Furthermore, since online students may never visit the campus of the college or university at which they study, they need online support with registration and other student services. Faculty members must be familiar with online technologies and be able to communicate, organize, and teach in online environments. Several additional factors contribute to the success of online education, foremost

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among them being the quality assurance and evaluation integrated within an online program.

There are several facets to the maintenance of quality in an online professional doctorate from institutional and programmatic perspectives (e.g., accreditation, accountability, competitive advantage, cost-effectiveness, and student retention). As faculty members and leaders of an online professional doctorate, we have approached quality maintenance from a programmatic perspective, focusing on two areas: the quality and the impact of the doctorate. In this chapter, we focus on the measurement of quality for the continual improvement of the online professional doctorate, leaving the topic of impact for the next chapter. We begin with a brief overview of the leading frameworks used to measure quality in online education and discuss how they pertain to quality maintenance in an online professional doctorate. We then share examples and research from the EdD in educational technology at the University of Florida (UF EdD EdTech) and describe how to ensure and maintain quality in various areas of the online doctorate.

QUALITY IN ONLINE EDUCATION

Meyer (2002) describes quality in distance education as a "complex and difficult concept, one that depends on a range of factors arising from the student, the curriculum, the instructional design, technology used, faculty characteristics, and so on" (p. 101). This complexity is compounded by the use of multiple terms such as *quality improvement*, *quality assurance*, and *quality management*. Quality can be defined differently depending on the stakeholders involved, their perspectives, and the prescribed guidelines or requirements of accrediting agencies. Simply put, quality assurance focuses on what must be put in place while building online programs, and quality management deals with measuring and maintaining quality.

At the institutional level, quality assurance includes strategic plans, strategic partnerships, compliance procedures, course development resources and support, professional development for faculty who teach online, technical infrastructure, the usability of online content for diverse learners and on mobile devices, and student support services. Several organizations around the world have compiled quality

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indicators to help institutions that offer online programs. For example, the Australasian Council on Open, Distance, and e-Learning (Sankey, Carter, Marshall, Obexer, Russell, & Lawson, 2014) and the Community Association for Community Education, together with the Office of Learning Technologies of Human Resources Development Canada (Barker, 2002) have published easy-to-use benchmarks, guidelines, and performance indicators for professionals seeking to assure quality at the institutional level. The European Association of Distance Teaching Universities (Williams, Kear, & Rosewell, 2012) provides guidelines for quality assessment of e-learning that include a comprehensive list of indicators and markers of excellence that can be used to ensure quality from the institutional to the course levels. In the United States, the Institute for Higher Education Policy (Merisotis & Phipps, 2000) released a report more than fifteen years ago on the quality indicators that could serve as benchmarks for success in distance education; the indicators were categorized according to institutional support, course development, teaching and learning, course structure, student support, faculty support, and evaluation and assessment. In 2002, the Council for Higher Education Accreditation (CHEA, 2002) identified additional areas important for accreditation and quality assurance, such as institutional resources, institutional organizational structure, and student learning outcomes. Together, these reports have informed more recent frameworks on the quality of online education.

The Online Learning Consortium (OLC), previously known as the Sloan Consortium, has played a key role in efforts to define quality in online education in the United States. The OLC provides a framework for quality online education that is built on five pillars: learning effectiveness, student satisfaction, faculty satisfaction, access, and scale (i.e., cost-effectiveness and commitment). The pillars are described in terms of goals, process or practices, sample metrics, and progress indices and can be used by higher education institutions. The OLC also provides a Quality Scorecard that administrators can use to "identify, measure and quantify elements of quality within an online education program" (onlinelearningconsortium.org/consult/quality-scorecard). The scorecard, which is grounded in research, lists indicators in the following nine categories, each of which can be scored on a scale of 0 to 3:

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- institutional support (e.g., policies for college credit and intellectual property)
- technology support (e.g., infrastructure, technology delivery systems, faculty/student technology skills)
- course development/instructional design (e.g., course content, course design, student-centred instruction)
- course structure (e.g., course organization, accessibility of materials, grading policies)
- teaching and learning (e.g., different types of interactions, library support, feedback)
- social and student engagement
- faculty support (e.g., professional development, technical assistance for faculty)
- student support (e.g., advising, administrative support)
- evaluations and assessment (e.g., evaluation of learning outcomes, faculty performance, program effectiveness)

At the course level, the national benchmarks and rubrics established by the Quality Matters (QM) program (qmprogram.org) are widely used by institutions of higher education in the United States to ensure the quality of online and blended courses. The eight standards that can be rated on a three-point scale are as follows: course overview and instruction, learning objectives, assessment and measurement, instructional materials, learning activities and interaction, course technology, learner support, and accessibility and usability. QM emphasizes the alignment of learning objectives, measurement, materials, interactions, and course technology as integral to online learning quality. The Blackboard Exemplary Course Program rubric (Blackboard Community Programs, 2012) is another commonly used rubric for course quality; it evaluates course design (e.g., goals, objectives, content presentation, learner engagement, technology use), interaction and collaboration (e.g., interaction logistics, communication strategies, building of community), assessment (e.g., expectations, assessment design, self-assessment), and learner support (e.g., orientation, software, instructor role, course policies, technical/accessibility issues, accommodations for disabilities, feedback).

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The above resources provide benchmarks, indicators, and rubrics that can be used to assure and measure quality at the institutional level and in individual courses in an online professional doctorate. The validated and widely used OLC Quality Scorecard is a valuable instrument that can ensure quality in an online program and identify areas for quality improvement. We perceive the above resources to be foundational and informative for those embarking on and providing online education. Additionally, we believe that a program-specific and program-integrated approach to quality improvement is necessary for an online professional doctorate because of the purpose and nature of doctoral studies. Unlike in an online master's program, coursework in an online doctoral program builds toward doctoral candidacy and a dissertation; thus, the individual courses contribute to the learning outcomes of the holistic curriculum, as do the non-course-specific experiences (e.g., synchronous and asynchronous interactions, online dissertation mentoring). Assessing the quality of individual courses can be valuable in an online professional doctorate but does not reflect the quality of the curriculum as a whole or the students' preparedness for independent research and writing during the dissertation phase. Student experiences in an online professional doctorate must be assessed across courses and non-course-specific interactions and activities to ensure that the program's larger goals are being met.

During the initial stages of the UF EdD EdTech, we struggled to identify instruments used in prior research to assess quality in online education that could be used to assess the quality of the curriculum as a whole or to measure students' development as researching professionals. Quality assessment in the first program offering was thus focused on the program design and on student and faculty satisfaction with that design and was used to improve the program design for the second cohort. Quality assessment efforts thereafter involved a combination of existing instruments in prior research and our own instruments used during the first offering and were adapted as the program evolved and matured. In the next section, drawing from our own research and the instruments used in our program, we present ways in which quality can be assessed in an online professional doctorate with the aim to improve program offerings for subsequent cohorts.

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At the time of writing, we have enrolled four cohorts—beginning in 2008, 2010, 2012, and 2014—of full-time professionals from diverse educational environments. We conducted formative research to improve the program's quality and impact for each subsequent cohort. We also conducted summative research with the first two cohorts after at least half of the students from each cohort had graduated. Based on our research and experiences with quality assessment in the UF EdD EdTech, we propose the following three areas for assessing quality in online professional doctorates: online teaching and learning before candidacy, online mentoring and research during dissertation, and institutional support (see table 2).

Table 2. Instruments and Resources for Assessing Quality in an Online Professional Doctorate

Instruments	Focus	Resources
Online teaching and learning before candidacy		
CoI program survey for an online professional doctorate	Online teaching and learning in a community of researching professionals	Kumar et al, 2011; Kumar & Ritzhaupt, 2014
Faculty interviews	Faculty perspective on teaching, curriculum, online community of inquiry, development of scholarly thinking, challenges, support structures	Kumar & Dawson, 2012b
Student focus groups	Building of community across online courses and non-course-specific virtual spaces Development of scholarly thinking, readiness for qualifying exams, student perceptions of the entire curriculum	Kumar, 2014b
Facebook interaction analysis	Building of community in student-driven virtual spaces	Kenney et al., 2013; Kumar & Hart, 2014

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Instruments	Focus	Resources
Information-literacy surveys and citation analysis	Information-literacy needs analysis Satisfaction with information-literacy instruction Acquisition of information-literacy skills Need for specialized information-literacy instruction	Kumar & Edwards, 2013; Kumar et al., 2012; Kumar & Ochoa, 2012
Course evaluations and open-ended responses on individual courses	Quality of individual courses	Blackboard, 2012; Institution-specific course evaluations; QM rubric
Online mentoring and research during dissertations		
Student interviews after dissertation completion	Online mentoring of dissertations, the dissertation process, best practices, challenges, peer support, institutional support	Henriksen et al., 2014; Kumar et al., 2013
Faculty interviews	Process, challenges, best practices regarding online mentoring of dissertations	Kumar & Johnson, 2017
Analysis of dissertations	Quality of research or the dissertation product according to the guiding principles	Dawson & Kumar, 2014
Institutional support		
OLC Quality Scorecard, student interviews or survey, and faculty interviews	Support for teaching in an online program, marketing, admissions, technology, administrative and registration support	Sankey et al., 2014; CHEA, 2002; Williams et al., 2012; OLC (onlinelearningconsortium.org/consult/quality-scorecard)
Faculty self-assessment and interviews	Prior experiences with online teaching and learning, online mentoring, competencies	PSU (weblearning.psu.edu); Schichtel, 2010; Williams, 2003)

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In what follows, we discuss in detail quality assessment in the first two areas, with examples from the UF EdD EdTech. The resources reviewed above include robust instruments for assessing the quality of the third area, institutional support, so we address it only briefly here. Furthermore, we believe that advising and support services for students should be integrated into online teaching and learning processes during coursework, online mentoring during the dissertation process, and institutional and administrative support throughout the program. Likewise, we perceive faculty preparedness and support as an area that is the responsibility of the institution and believe that it should be considered in the assessment of quality in all three areas—online teaching and learning before candidacy, online mentoring during dissertations, and institutional support.

Online Teaching and Learning Before Candidacy

In an online professional doctorate that is designed based on the community of inquiry framework, online teaching and learning before candidacy comprises several areas ranging from individual courses to the building of a community of inquiry. In this section, we describe the data sources that have provided insight, from both student and faculty perspectives, into the quality of instruction, interactions, and support within our program.

The community-of-inquiry survey for online professional doctorates. The UF EdD EdTech was designed to develop a community of researching professionals based on Garrison et al.'s (2000) framework. Notwithstanding the wealth of research available on this topic, we struggled to find a survey that would assess the quality of such a community as it develops in an online program that includes courses and non-course interactions. We decided that the analysis of a random sample of discussion forums across online courses would not adequately represent community development. As a result, we developed a survey for our first cohort and adapted an existing survey for our second cohort in the UF EdD EdTech.

The survey for our first cohort was based on Garrison et al.'s (2000) community-of-inquiry framework but included items specific to our program to ensure that we were evaluating all the aspects of our first program offering. Items in the survey pertained to students' satisfaction with program elements, learning environments, and support; their perceptions of learning and community building; and the relevance and

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transferability of their learning to their practice (Kumar et al., 2011). The survey, with an overall reliability of 0.88, contained three sections: Faculty Instruction and Feedback (Cronbach's alpha = 0.90); Support, Learning Environments, and Community-Building (Cronbach's alpha = 0.76); and Application of Learning (Cronbach's alpha = 0.96). It included open-ended questions about student challenges and suggestions for improving the program (Kumar et al., 2011). Items in this survey about community building and learning environments can be adapted for other online professional doctorates based on the environments being used, and items for application of learning can also be adapted based on the goals of the program. We found the anonymity of respondents to be beneficial for quality improvement, since students may not have been as forthright if their identities were known. For instance, students rated faculty presence, cognitive presence, and administrative support highly but reported that the goals of the doctorate had not been clearly communicated at the beginning. The results also highlighted the strengths and weaknesses of the learning environments used for community building, enabling us to probe further during focus groups or faculty interviews and resulting in a redesign of certain learning environments for the next program offering (Kumar, 2014c).

For the second iteration of the program, we adapted the community of inquiry (CoI) survey for online courses (Arbaugh et al., 2008) to make it relevant for online programs, and we included items from our first survey specific to our online professional doctorate. The survey contained items in three sections: Faculty Presence (Cronbach's alpha = 0.93), Social Presence (Cronbach's alpha = 0.91), and Cognitive Presence (Cronbach's alpha = 0.93). It included open-ended questions in each area and asked for suggestions for improvement. Kumar and Ritzhaupt (2014) document how we adapted individual items from the original CoI survey. For instance, some universal changes were made: "instructor" was changed to "faculty," "participants" to "cohort," and "course" to "program." Item 7 in the CoI survey, "The instructor clearly communicated important course goals," was reworded to "The faculty clearly communicated program goals for Year 1," and item 34, "I can apply the knowledge created in this course to my work or other non-class related activities," became "I have applied knowledge or skills gained from Year 1 of the EdD program to my practice/work environment."

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This survey can be useful for others who would like to assess the development of a community of inquiry in an online professional doctorate. In the UF EdD EdTech, for example, students rated the on-campus orientation lower than other interactions and environments for the building of community; open-ended responses revealed that the orientation contained too many information sessions and not enough opportunities for interactions among students (Kumar & Ritzhaupt, 2014). In subsequent program offerings, we presented some of the orientation information online and built in more activities for students. Despite consistently high ratings, we continue to use this survey at the end of the first year of each program cycle because it provides us with a comprehensive picture of student satisfaction, program strengths and weaknesses, and student needs. We highly recommend using a survey at the end of the first year that is specific to the online professional doctorate and then following up with qualitative techniques to collect data on problematic areas.

Faculty interviews. In addition to exploring the student perspective, it is critical to collect data from faculty members about their experiences teaching and advising in the online professional doctorate in the first year. We have found it helpful to interview faculty members about each of the following: online teaching, learning environments, and curriculum in the professional doctorate; the development of an online community of inquiry and scholarly thinking; the challenges they face while teaching and mentoring online; the support structures they need; and any other concerns they may have. In our program, all faculty members involved in the development and implementation of the first offering participated in thirty- to forty-five-minute interviews conducted by a new faculty member. They were largely positive about their experiences and collaborative efforts, but they also reflected on challenges, such as program workload and advising in the context of research, teaching and service; the expectations of rigorous doctoral work in the online environment; and the management of learning environments. We used the results of the CoI survey to probe for the faculty members' perspectives on areas that were challenging for students. For example, students rated Google Groups for non-course-specific interactions lower than other environments, and the faculty members reflected that because this group was faculty led, it served more as a question-and-answer forum than as a

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community. This led to a redesign, with a transfer of responsibility and more student autonomy for the next cohort (Kumar, 2014c). Likewise, the importance of learning presence emerged during faculty interviews and was subsequently integrated into the program design. Interviews provide useful insight into faculty members' understanding of and work in the online professional doctorate and into how they can be better supported while teaching and mentoring online. If program leaders cannot find a partnering researcher to conduct interviews, we recommend a reflective meeting in which each faculty member shares thoughts on specific questions and all participants discuss the strengths, weaknesses, and challenges of various aspects of the online professional doctorate.

Student focus groups. In addition to administering an anonymous student survey at the end of the first year, we conduct student focus groups at the end of the second year to better understand the development of scholarly thinking, community building across courses and non-specific program spaces, and student satisfaction with the curriculum. If an online professional doctorate includes qualifying or comprehensive exams, conducting the focus groups after the exams helps assess students' perceptions of preparedness for doctoral candidacy. In the UF EdD EdTech, program leaders formulate the questions, but faculty members or researchers who are not associated with the program conduct the focus groups, which allows for some level of anonymity among students providing feedback and ensures the validity of the qualitative data collection process. We find the results of these focus groups useful because students reflect on their experiences over the course of two years from their perspectives as doctoral candidates who have completed qualifying exams, which is different from the data they provide as they are working toward candidacy. Students reflect on their experiences from a bigger-picture perspective and provide suggestions for various aspects of the program, including community-building activities, the sequencing of courses in the curriculum, and the timing of information-literacy instruction.

Facebook interaction analysis. We have found sense of community and peer support across all program-related spaces to be essential for student satisfaction, learning, and retention in our online professional doctorate (Kumar, 2014c). During focus groups, students have highlighted the

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importance of student-driven spaces in which they interact with each other as people and professionals, not just as students in a program. Two students undertook an analysis of the interactions within their Facebook group to identify the ways in which they engaged with each other and the topics that were most discussed and that contributed to community building. They expected Facebook to be the focus of social interactions among their group, but they found that 93 percent of conversations in the first six months centred on the program (e.g., courses, assignments, professors; Kenney et al., 2013). We used the results of the Facebook analysis to communicate to future cohorts the value of learning presence, student engagement, and a student-driven virtual space. To avoid privacy and conflict-of-interest issues, we suggest that participating students or external researchers, rather than faculty members or program leaders, study the topics and types of interactions within such spaces to understand their value in the online professional doctorate.

Information-literacy surveys and citation analyses. We suggest using surveys to assess whether information-literacy instruction is meeting the needs of professional doctoral students and whether students are acquiring and practicing the skills and strategies needed in their research. In the UF EdD EdTech, we adopted a program-integrated approach to information literacy. Before students begin the program, we distribute a needs-assessment survey about students' prior experiences with library instruction; their familiarity with discipline-specific databases and citation styles; and their perceived confidence, anxiety, and expertise regarding library resources. In addition to providing information on the skills and content considered essential to the doctorate, the results of the needs assessment inform the content and design of information-literacy instruction during the first year of the program (Kumar et al., 2012).

When the students have been in the program for six months, we use a post-instruction survey to assess student satisfaction with information-literacy instruction, acquisition of information-literacy skills and strategies, and anxiety and self-efficacy regarding information literacy. Students in our program have reported improved skills and confidence but have also made suggestions regarding the timing of instruction, formats that worked better for them, and topics for further instruction; we integrated these suggestions into information-literacy

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instruction for subsequent cohorts (Kumar & Ochoa, 2012). This survey provides us with information about professional students' technical and information-literacy needs and skills, and, more importantly, it makes students aware of how essential such skills are to their doctoral studies. Surveys have shown that most of our students have plenty of technological expertise and are comfortable using public search engines but are often unfamiliar with or unsure how to search within discipline-specific databases (Kumar & Edwards, 2013).

In addition to surveys, information-literacy activities that are integrated into initial coursework help us assess whether students are able to search for, find, and manage relevant literature and address any gaps in their knowledge. For example, students can be asked to find a peer-reviewed article about a particular topic. Artifacts and assignments can also be analyzed to assess students' information-literacy skills. In the UF EdD EdTech, students are required to complete a literature review by the end of their first year. In one instance, librarians undertook a citation analysis of students' literature reviews to investigate the extent to which information-literacy instruction had been successful in helping students with this assignment. Although students were found to have acquired information-literacy skills, the citation analysis revealed that they were not completely successful at critiquing research, a skill that is essential for scholarly thinking in an online professional doctorate (Kumar, 2014b).

Collaboration with academic librarians is crucial not only for the design and implementation of program-integrated information literacy but for the assessment procedures described in this section. Faculty in an online professional doctorate do not always have expertise in information-literacy skills, and electronic media or interfaces used by libraries change rapidly; thus, the inclusion of a librarian in quality assessment in this area is essential. We have found it challenging to update, validate, and implement information-literacy surveys in a timely manner in our cohorts over the years because of several changes in library leadership. Although incoming librarians have been enthusiastic and willing to collaborate on information-literacy integration and design, not all librarians are experts in information-literacy assessment, especially for nontraditional students.

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Course evaluations and open-ended responses on individual courses. We believe that quality in an online professional doctorate should be assessed holistically from a program perspective and should not be approached in the same manner as it is in a master's program, in which the assessment of individual courses may be sufficient. Nevertheless, when courses are created and offered for the first time, new faculty are teaching in the program, or courses are redesigned for quality improvement, we recommend reviewing course evaluations and using course-specific rubrics (e.g., QM, Blackboard Rubric) to assess the quality of individual courses. For example, when we offered a new blended course in our program, student comments and ratings from standard course evaluations provided useful feedback on ways to improve group activities and the scaffolding of presentations in the course. Similarly, student feedback on research courses offered by a different department revealed the need for resources and activities that were more aligned with students' research interests and professional contexts.

Mentoring and Research During Dissertations

Students' relationships with their mentors and their sense of connectedness to the program, institution, and peers contribute to their ability to persist through multiple challenges and move successfully through the dissertation process (Kumar et al., 2013; Kumar & Johnson, 2014). In this section, we describe data-collection processes that can greatly contribute to quality improvement during this critical phase of an online professional doctorate.

Interviews with program graduates. Interviews with students shortly after they graduate can provide significant insight into their experiences during the dissertation process. The questions posed during such interviews focus on the writing of dissertation proposals, the online mentoring of dissertations, the dissertation process, faculty best practices, student challenges, and peer and institutional support. The data that emerged from interviews with the first nine graduates of the program highlighted online mentoring strategies used by faculty members that had helped students and revealed effective strategies used by students that could be emulated (Kumar, Johnson, & Hardemon, 2013). These data were shared with subsequent cohorts and integrated into program materials as practices to emulate; they were also shared with faculty members, who discussed

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the strategies that worked and reflected on ways to address the challenges that students experience. During the interviews, program graduates also suggested improvements in areas of institutional support, such as clearer instruction on the Institutional Review Board guidelines for research and increased familiarity with the on-campus office that assists students with the formatting of dissertations. These suggestions were then integrated into the program. We believe that a qualitative approach to data collection on the dissertation stage is necessary. In the UF EdD EdTech, interviews with graduates have provided valuable insight into the dissertation experiences of students conducting independent research in environments different from those of traditional research and into the impact of the dissertation process for their professional environments.

Faculty interviews. In addition to conducting graduate interviews, we interviewed faculty members about their experiences with the online mentoring of dissertations—specifically, about strategies, challenges, and other factors that influenced the dissertation process. These interviews were extremely insightful after the first program offering because until then, the participating faculty members had never mentored a dissertation online, nor had they mentored a professional doctoral dissertation. Their reflections on which strategies had worked well for them, what challenges arose regarding boundaries and expectations, and how we could improve the curriculum to better prepare students for the dissertation process were useful for quality improvement of the program (Kumar & Johnson, 2017). For example, faculty members emphasized the need for community and peer support not only during the initial coursework leading up to candidacy but also during the dissertation process; this resulted in increased small-group mentoring by faculty in subsequent cohorts. If it is not possible to conduct interviews with the faculty members, we highly recommend that faculty members participate in a structured reflection about their experiences during the dissertation process, followed by the sharing of reflections with each other.

Analysis of dissertations. While graduate and faculty interviews can shed light on the process of mentoring dissertations online, it is equally important to analyze the product of this phase of an online professional doctorate—the dissertations produced by students. In chapter 5, we presented the guiding principles for dissertations in the UF EdD EdTech

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and our analysis of the first twenty-three dissertations to assess whether the guiding principles were being fulfilled. Those involved in designing other online professional doctorates may wish to craft their own guiding principles and analyze the alignment of dissertations completed within their programs with those principles. Such an analysis can reveal how dissertations are conducted in professional environments (Dawson & Kumar, 2014); the quality of dissertations; the types of methodologies that students are using (Dawson & Kumar, 2016); and the ways in which dissertations are impacting professional environments. Program leaders can identify areas that may need more attention in the curriculum of the doctorate or during online mentoring of dissertations to ensure research rigour and dissertation quality.

Institutional Support

As we described earlier in this chapter, the OLC Quality Scorecard (onlinelearningconsortium.org/consult/quality-scorecard) is a robust instrument with which to assess administrative and institutional support for an online program. It addresses areas such as technology infrastructure, accessibility of materials, credits, intellectual property, faculty support, student support, course development, and instructional design. Additionally, it can be worthwhile to collect feedback (e.g., through interviews) from faculty members who teach in an online professional doctorate and from students (e.g., through focus groups and surveys) to learn more about their perceptions of quality in these areas.

Faculty preparedness and support for online teaching and mentoring contribute to the quality of an online professional doctorate. The existing literature on competencies needed for teaching online describes several roles of online faculty. Described as pedagogical, social, managerial, and technical (Berge, 2008), these roles include teacher, instructional designer, technology expert, administrator, site manager, graphic designer, support person, editor, librarian, and evaluation expert (Thach & Murphy, 1995). The main competencies that online faculty need fall into four categories: instruction, communication, technology, and management (Williams, 2003). Hicks's (2014) review of research on and instruments for faculty professional development related to online teaching provides insight into current approaches to faculty readiness and support. However, since the surveys and instruments in the literature

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do not specifically address the competencies, needs, and preparedness of faculty in online doctoral programs, we cannot recommend existing instruments for the assessment of quality in this area. Institutions of higher education often develop their own instruments that are then made available to others. For example, Penn State University has a self-assessment tool that faculty members can use to evaluate their competencies in this area (weblearning.psu.edu/FacultySelfAssessment). We propose that the interviews conducted to understand faculty experiences of teaching in an online professional doctorate before candidacy and after the dissertation process (described earlier in this chapter) also include questions about perceived needs and support for teaching online. Course evaluations by students and the use of learning analytics are two other sources of data about institutional support and faculty preparedness for teaching and mentoring in an online professional doctorate.

KEY CONSIDERATIONS

The quality assessment procedures and instruments that we have presented in this chapter will be most valuable if the following key considerations are taken into account.

Approaching quality from a holistic program perspective. In an online professional doctorate, it is important to focus on the quality assessment of the complete curriculum as a sequence of learning activities that connect theory, research, and practice; that reflect progressive learning and the development of scholarly thinking; and that encompass different types of online and face-to-face interactions among learners, faculty members, and peers across multiple learning spaces. Unlike assessment of quality for master's or bachelor's degrees, assessing quality in individual courses is valuable but not reflective of the nature of an online doctorate that includes teaching and learning during coursework as well as individual work and online mentoring during the dissertation. Quality assessment of an online professional doctorate requires formative and summative research about both the process and the product—that is, research that assesses quality each year but also assesses the quality of the dissertation process, the dissertations produced, and the impact of the program on researching professionals and their professional environments.

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In the UF EdD EdTech, we assess quality during the year in certain areas (e.g., information literacy), and at the end of each academic year in other areas (e.g., student satisfaction). We have been able to create a timeline for quality assessment based on the content of the curriculum, but others might find it challenging to identify specific points during an online professional doctorate when quality should be assessed. A key consideration from a holistic program perspective is the alignment of the points of assessment and the instruments with the different stages, phases, and content of the curriculum.

Defining the purpose of quality assessment. The purpose of quality assessment (e.g., accreditation, funding, quality improvement) influences how quality is assessed. In the UF EdD EdTech, the purpose of quality assessment is the continual improvement of the program. To this effect, during the first offering, the different instruments we used were grounded in theory and literature and were often adapted or created to be specific to the program design. We did not use pre-existing instruments, relying instead on more open-ended methods of data collection to assess how the curriculum is working and which areas might be improved. During later offerings of the program, we have continued to focus on quality improvement but have shifted our main emphasis to quality maintenance, for which we adapted existing instruments or refined instruments used earlier for data collection. Furthermore, the instruments used with each cohort (e.g., the questions asked during the interviews or focus groups) need to be changed occasionally to align them with the changes that have been made in the program design. Simultaneously, the specific composition and needs of each cohort of students guides us in varying the emphases on content areas. For example, enculturation into the field of educational technology became an emphasis with a cohort that included many students who did not have previous degrees in the discipline of educational technology.

Although we did not anticipate doing so at the time of data collection, we have used the data to raise awareness about the program among students and faculty at our institution and to market our program to prospective professional students. Additionally, the data collected about the impact of our online doctorate helps us ensure that the program is achieving its goals and impacting educational practice.

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Aligning quality assessment with program characteristics and goals. It is important to ensure that quality assessment procedures align with the specific characteristics of the online professional doctorate and its goals. Existing instruments for assessing the quality of online programs, such as the Online Quality Scorecard, cover the generic elements that must be present in quality online programs. However, online professional doctorates vary widely by discipline, country, and institution. Our model at the University of Florida consists of online coursework followed by individual research, but other online professional doctorates might include little or no coursework and require students to begin work on their dissertation from the beginning. Yet others might emphasize collaborative projects or dissertations and may value certain types of knowledge and skills specific to their discipline. Online professional doctorates might also require students and faculty to use specific technologies (e.g., during the dissertation mentoring process) or may involve faculty from multiple departments or from widely dispersed geographic regions. In each case, existing assessment frameworks and instruments will need to be adapted to measure the program being studied.

Collaborating with others for quality assessment. For data collection during quality assessment, we highly recommend partnering with colleagues who have not been involved in the program design in order to benefit from a more objective and critical perspective. In the UF EdD EdTech, one of the authors joined the program a year after it had begun. Because she had not been involved in program development, she was able to conduct quality assessment objectively. However, as her program leadership responsibilities increased, collaborations with faculty or graduate students outside the program became essential. We have found it valuable to partner with on-campus doctoral students who have expertise in qualitative and quantitative research and who are not associated with the online professional doctorate. We sometimes have doctoral students in the UF EdD EdTech who specialize in the areas of adult learning or online teaching and learning, so we can partner with these students within the program for quality assessment. For instance, one group of students interviewed peers as part of a qualitative research project about challenges that researching professionals face with time management, and they then presented their results at a leading conference. Although

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program faculty members were not involved, the results of this project provided key information that informed program redesign. As another example of student research, two students analyzed Facebook interactions among students in the cohort and then shared the anonymized results with the program leader and subsequently published an article about their project.

CONCLUSION

Quality assurance and assessment in any academic program has become increasingly important not only to demonstrate high academic standards but also for administrative and accreditation procedures such as maintaining rankings (in regions where these exist) and securing or sustaining funding. As the need for researching professionals grows and online professional doctorates increase in number, quality assurance and management are essential to ensure and demonstrate the robustness of online doctoral education. Strategies and instruments used in such endeavours must be commensurate with the complexity of educational experiences (e.g., the inclusion of noncourse experience and interactions, pre- and postcandidacy activities) in an online professional doctorate and should align with a program-specific and program-integrated plan for quality. Existing frameworks and instruments often have to be adapted for program-level application to address the goals of a doctorate that includes mentoring for both independent research and dissertation writing. Furthermore, institutional level support for online educational endeavours as well as for faculty and students has to be ensured and evaluated.

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8 Identifying Impact

In recent years, much debate has surrounded the definition of doctoral impact and its measurement in both traditional and professional doctorates (Halse & Mowbray, 2011). Professional doctorates differ according to the discipline and university—some consist solely of work-based projects or research supervised by university faculty, and others include coursework and discipline-specific dissertations. Notwithstanding the format and structure, professional doctorates can have a substantial impact for professionals and their work environments by connecting professionals, universities, and institutions or organizations. Online professional doctorates in which participants remain in their professional contexts while pursuing an academic degree online provide even more opportunities for such connections, especially if they are purposefully designed to connect theory, research, and practice. In addition to maintaining quality in online teaching and learning, an important aspect of quality management in an online professional doctorate is assessing to what extent it is meeting the needs of researching professionals and merging theory, research, and practice to effect change. The impact of online professional doctorates might differ from that of traditional doctoral education; it is therefore necessary to ensure that what is being measured as impact is both envisioned and facilitated during an online professional doctorate, providing alignment among program goals, program design, and the research conducted to assess impact.

In this chapter, we discuss the types of impact that an online professional doctorate can have and the ways in which they can be documented. We then share the types of impact we have identified in the EdD in

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educational technology at the University of Florida (UF EdD EdTech) and describe key considerations for identifying and documenting impact in an online professional doctorate.

DEFINING IMPACT IN AN ONLINE PROFESSIONAL DOCTORATE

We subscribe to Halse and Mowbray's (2011) conceptualization of the doctorate "as both a process and a product" and their call to "think anew about the impact of the doctorate from a more critical frame," one "that attends to the diversity of individuals, organizations and institutions participating in various phases of the doctorate" (p. 514). We thus believe that a program's impact must be assessed throughout the phases of the student journey in addition to after program completion. Furthermore, the impact of an online professional doctorate and the methods used to measure it depend on the goals of a specific program, the discipline, and the design of the program (e.g., coursework and a dissertation, only a dissertation, a portfolio of artifacts and projects). It is, therefore, important for program leaders to identify the outcomes they will measure and the impact that program designers and the institution value before making decisions about instruments and data collection.

Impact in doctoral education has been defined as the "outcomes, benefits and returns that include, but are not limited to, economic returns" (Halse & Mowbray, 2011, p. 514) and has been conceived of as twofold: impact for the learner and impact for the organization (Halse & Mowbray, 2011; Lester & Costley, 2010). Researchers have reported that professionals have gained increased expertise, confidence, recognition, responsibility, and stature in the workplace as a result of professional graduate programs (Costley & Stephenson, 2008; Lester & Costley, 2010; Rhodes & Shiel, 2007). For organizations, "increased professionalism and motivation" (Lester & Costley, 2010, p. 568) and organizational changes in terms of professionals' job roles or responsibilities within the organization has followed from professional doctorates. Therefore, the impact of an online professional doctorate can be broadly categorized in terms of changes for researching professionals and for their professional environments.

In our model for an online professional doctorate that connects theory, research, and practice, we assert that the participating researching professionals should combine foundational and theoretical knowledge in their disciplines with knowledge of research in their contexts to

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conduct research that generates knowledge to improve their professional contexts. We consider it valuable to document if and how knowledge acquired in academic environments during the online doctorate is applied to professional contexts and what changes in professional environments are effected by the research conducted. While the primary purpose of knowledge produced in the online professional doctorate is to address a problem of practice in a professional environment, the process of fostering scholarly thinking (i.e., reading, writing, reflection, and enculturation) leads to the dissemination of such knowledge in contexts beyond the immediate professional environment of the researching professional. Researching professionals in the UF EdD EdTech have conducted research and acquired and shared knowledge about educational technology that is applicable not only in their immediate professional contexts but also in other contexts in the discipline or across disciplines. Thus, online professional doctorates lead to both Mode 1 and Mode 2 knowledge production, where Mode 1 is largely disciplinary and Mode 2 is largely interdisciplinary (Gibbons et al., 1994). Based on the goals of an online professional doctorate and the types of activities in a curriculum, different types of knowledge may be generated and disseminated, making it important for program leaders or those wishing to identify impact to determine the type(s) of knowledge being generated and the impact of that knowledge on professional environments and the discipline.

The knowledge "formed and performed" (Tennant, 2004, p. 431) during doctoral education is not always visible because the doctoral student—in this case, a researching professional—both acquires and generates knowledge. To assess how knowledge is formed and performed, it is essential to understand (a) whether students are experiencing transformation and demonstrating changes in approach, behaviour, and action as these pertain to their professional practice or disciplines; (b) if and how students' thinking, perceptions, and identities have changed; and (c) if and how students are growing professionally and contributing to changes in their professional contexts. Furthermore, in terms of individual development, some researchers have highlighted as impact the development of students as leaders and experts in their professional contexts or disciplines (Costley & Lester, 2012).

Transformational learning aims for changes in an individual's perspectives (beliefs, attitudes, and behaviour) and can be fostered through

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critical reflection and critical discourse (Mezirow, 1998). "A transformed way of understanding, or interpreting, or viewing something" (Meyer & Land, 2003, p. 4), or the crossing of a threshold, leads to a changed outlook on a discipline, changed approaches, and/or changes in personal identity. Land and Meyer (2010) describe transformation as a journey through preliminal, liminal, and postliminal stages. Students go through a "state of liminality" (Meyer & Land, 2003, p. 10), where they struggle with old perspectives and the integration of new knowledge, before they can cross the threshold to reconfigure their understanding, which they demonstrate by changes in discourse, actions, and behaviour. Identifying what and when these changes occurred within researching professionals would shed light on the ways in which their doctorate work contributed to the transformation of their thinking. In order to document transformational learning, which is not sequential in nature, information would need to be gathered from students at regular intervals throughout and after their program. Further complicating such documentation would be the opportunities professionals have to apply acquired knowledge or changed understanding, approaches, and behaviours on the job; therefore, professional growth and the impact for professional environments is ongoing and should be documented throughout the online professional doctorate program.

Measuring Impact in an Online Professional Doctorate

Researchers have used a wide range of quantitative and qualitative methods to assess changes in students' identity, thinking, approaches, behaviour, and action during doctoral education, including surveys, interviews, biographies, journals, concept maps, open-ended survey questions, and portfolios (Kiley, 2009; Land & Meyer, 2010; Lee, 2008; Wisker, 2015). Although several of these methods relate to individual courses and only occasionally to complete programs, in an online professional doctorate, it is important to study students' development of scholarly thinking, transformation, and professional growth *across* courses, seminars, individual work, and the dissertation.

The impact of a program and its accompanying experiences is often assessed by collecting data and analyzing dissertations by graduates of the program. For example, Costley (2010) describes the individual and organizational impact of a transdisciplinary Doctor of Professional

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Studies program in the United Kingdom based on interviews with program graduates. She categorizes impact as direct changes made in the graduates' organizations as a result of projects from the doctorate, enhanced credibility experienced by graduates, graduates' perceptions of increased capabilities, and graduates' continued interest in ongoing learning and professional development following the doctorate. In addition to analyzing interviews with students who had completed or were writing their dissertations, Burgess et al. (2013), in order to identify whether knowledge and skills were transferred to professional practice, analyzed students' dissertations in three professional doctorates that contained reflections on the doctoral process and on the impact of their research. They reported the impact of the doctorate in terms of motivation; changes to students' values, perceptions, and behaviour; student perceptions of research processes; and the ways in which students applied in the workplace the knowledge and skills they acquired during the doctorate. Dissertations in professional doctorates have also been analyzed for impact in the form of different types of knowledge or different types of generated outputs (Costley & Lester, 2012; Lester, 2012).

Going beyond graduates' perspectives and dissertations, Fox and Slade (2014) interviewed peers and senior colleagues at graduates' work organizations, as well as the graduates themselves, to determine what changes had taken place in the graduates and in their workplaces and how these changes had impacted their workplaces. They found that graduates were showing greater confidence and were engaging in multiple ways within and beyond their professional contexts, leading the authors to conclude that graduates' changed self-perceptions had led to increased interactions and a larger network. This reinforces the research of Sanders, Kuit, Smith, Fulton, and Curtis (2011), who found that the perceived professional identities of students in professional doctoral programs changed during their studies and were impacted by their broader networks.

The above examples illustrate the data sources and types of impact in professional doctorates as reported in the literature; however, the research was not conducted in online doctorates. Discourse, reflection, articulation of perspectives, and implementation of research occur in electronic form in an online professional doctorate, resulting in data that is available and analyzable. We are fully cognizant that such data sources serve as external reflections of cognitive processes and ontological change

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and that much of this change is internal. Attempts can be made through prompts, activities, and research instruments to make such change transparent during online doctorates. Land and Meyer (2010) called such data sources "jewels in the curriculum" that help "externalize" students' thought processes (p. 75). Changes in students' thinking, perceptions, and identities; in their disciplines; and in their professional contexts can be documented in the form of journals, text, audio or video reflections, other multimedia artifacts, or portfolios (Kumar & Arnold, 2014). For example, in the UF EdD EdTech, at the end of their first year students write a reflection about their growth as researching professionals that program leaders subsequently analyze to determine the transformation and changes in self-perceptions that have occurred.

Professional doctoral students interact not only in academia with professors and peers but also in professional organizations and at their workplaces, making it difficult to identify exactly where and when such changes occur. Although it is possible to survey online students and interview them about their changed behaviours in environments outside of the online professional doctorate, collecting data from students is challenging at a distance. Students' self-reports of changes in behaviour or action can be confirmed with up-to-date curriculum vitae (CVs) and professional websites, which can provide concrete information on professional growth, including changes in roles and responsibilities and actions such as leading workshops and making presentations. Data can also be collected in the form of surveys or interviews that target areas such as application of knowledge to practice, participation in professional organizations, and new initiatives and projects. An analysis of the networks and communities in which professional doctoral students participate can also provide insight into whether they are interacting and disseminating knowledge in new professional and academic communities, organizations, and spaces. As we mentioned earlier, data from students' professional environments (e.g., from colleagues and supervisors) can also provide information on how theory and research from their academic experiences are interacting with and changing their practice.

In addition to impacting doctoral students and their professional environments, online professional doctorates can impact the institution offering the doctorate in at least four ways. First, online professional doctorates can impact other programs at the institution. At the University

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of Florida, for example, an online professional doctorate in teacher education was developed and offered soon after the UF EdD EdTech was introduced. Although the program is very different from ours, faculty members initially held several discussions with us to understand how our program is structured and the challenges that we have faced. Second, an online doctorate can impact the institution in terms of the availability or development of both online student services and online information-literacy resources. When we first offered the UF EdD EdTech, library resources for online students were not well developed at our institution. The resources available and the understanding of professional doctoral students have greatly increased with the offering of three online professional doctorates in our college and of multiple professional online programs at the university. Third, an online doctorate can impact how faculty members mentor students in on-campus programs. Ten of the eleven faculty members who teach in two online professional doctorates at our institution reflected during interviews that their mentoring of online professional students has led to their adoption of additional strategies when mentoring on-campus doctoral students (Kumar & Johnson, 2017). A fourth impact of an online doctoral program on the wider institution is in faculty members' professional growth and learning about professional environments and other disciplines. During online interviews, faculty in our program who had not been professional doctoral students and whose research had not been conducted in professional environments reported that their work with online professional doctoral students had increased their awareness and knowledge of research in specific professional environments (Kumar et al., 2013).

The goals and purpose of impact measurement can thus encompass not only the impact for participating professionals and their professional environments but also the impact for faculty members, the program, and the institution offering the online professional doctorate. As faculty members in an online professional doctorate, we have focused on the measurement of impact for professional doctoral students and their contexts in the UF EdD EdTech, which we describe in the next section.

Measuring Impact in the UF EdD EdTech

In our online doctoral program, we emphasize the relevance of instructional content to students' professional goals and the applicability of

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program activities to real-world environments. We encourage students to focus on a problem of practice and to produce artifacts that are relevant and useful in the context of those identified problems. We have found that when connections among theory, research, and practice are consistently scaffolded throughout an online professional doctorate with the aims of fostering scholarly habits of mind, conducting research that improves professional contexts, and helping professionals achieve their learning and professional goals, the measurement of impact reveals not only changes in researching professionals, including in their behaviours and their professional environments, but also dissemination of knowledge in various forms. In the following sections, we describe the data sources we used to assess impact with different cohorts during different stages of the UF EdD EdTech and the types of impact that we identified. Although not all of these sources of data were used with all cohorts, they provide an overview of various data-collection methods. We hope that our presentation of impact in our program can help others consider possible areas of impact in their online professional doctorates and methods of documenting these impacts.

We collected data from our first two cohorts during each year using a survey, semi-structured interviews, and focus groups. Our goal was to determine how students were applying knowledge acquired from the doctorate in their practice, enculturating into the discipline, experiencing growth, and contributing to changes in their professional environments during the online professional doctorate (see figure 3). Doctoral students or faculty members not involved in the design or implementation of the program collaborated to collect these data. Students' CVs were analyzed to triangulate students' self-reported impact.

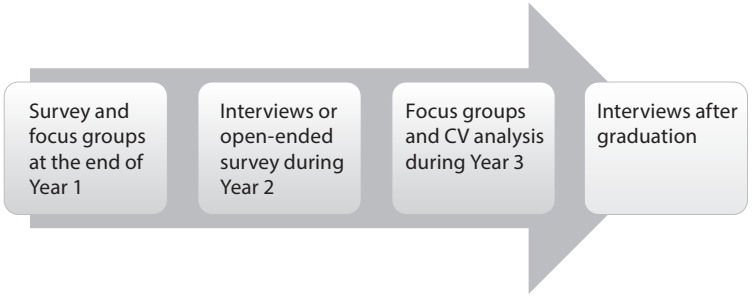

Figure 3. Sources of impact data in UF EdD EdTech.

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Primary Data Sources

Survey at the end of Year 1. At the end of Year 1, we used a survey to assess the quality of online teaching and learning in the UF EdD EdTech. The survey had an internal consistency reliability of 0.88 (Kumar et al., 2011) and featured three sections: Faculty Instruction and Feedback; Support, Learning Environments, and Community Building; and Application of Learning. The Application of Learning items helped identify students' application of knowledge and professional growth as a result of the online professional doctorate.

Focus groups at the end of Year 1. To further probe for the changes students experienced regarding identity and approach to professional practice, faculty members not connected with our program conducted focus groups with one of our cohorts. Focus-group questions probed for changes in students' approaches to research, their professional practice, and their disciplines. The aim was to identify whether students' perceptions of themselves as scholars and professionals in their contexts had changed during their first year in the professional doctorate.

Student interviews during Year 2. To identify specific areas of impact, we conducted telephone or in-person semi-structured interviews during Year 2 about students' professional growth and the impact of the professional doctorate on their practice. The interviewer, a new faculty member, probed for tacit changes as well as specific applications of content to professional contexts during the first one and a half years of the program. Because students entered the program with considerable experience and expertise, follow-up questions focused on impact specific to learning from the program: for example, Was this an initiative you had planned before you began the doctorate or one you would have developed regardless of your participation in it? Had you presented at similar conferences before? (Kumar & Dawson, 2012a, 2012b). Students were encouraged to provide specific names of initiatives and links to resources as evidence of their claims. Open-ended questions were also posed to provide students with opportunities to highlight other areas of impact. It was not possible to conduct interviews with all cohorts; therefore, we used an open-ended survey to collect this data.

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Students' curriculum vitae. Although students were asked to provide resources as evidence, the interview, focus group, and survey data in the UF EdD EdTech were often based on students' self-reports; therefore, triangulation was achieved by analyzing students' CVs for achievements, professional activities in educational technology, and changes in job roles. All students had professional websites in the public domain that provided information to corroborate their statements. Both the CVs and websites served as sources of data.

Focus groups during Year 3. Because of our inability to conduct individual interviews with one cohort during the first two years, faculty members from another program conducted focus groups for us between the completion of qualifying exams and the beginning of the dissertation phase. The questions focused on students' experiences during the first two years in the program and how those experiences had influenced their professional growth and practice.

Post-program student interviews. Given the highly individual nature of the dissertation process, despite small-group mentoring and peer support, we consider it important to conduct interviews after program completion about students' experiences with the dissertation and online mentoring. In the UF EdD EdTech, a final question at the end of this interview probed for the impact of the dissertation and the research process on students' identities, their professional growth, and their professional environments. A researcher who did not contribute to the design or implementation of the professional doctorate conducted these interviews.

Other Sources of Data

Artifacts and reflections submitted by students during the doctorate have informed decisions about curriculum and program activities in the UF EdD EdTech but have not been analyzed to document student growth and impact. We hope to analyze these rich data sources moving forward. We have, however, analyzed all dissertations completed by the end of 2014 to identify the types of research and research methodologies being used in professional environments and will follow up with graduates about the impact of their research on those environments. In addition to collecting data from students and their artifacts, we would have liked

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to interview or survey the leadership in graduates' professional contexts about their professional growth and the impact of their research on those contexts. However, we lacked the time and resources in our program to do so. We would highly recommend this additional source of data to program leaders.

The faculty working in an online professional doctorate and mentoring individual students can also provide insight into student growth. Interviews with faculty about online mentoring of dissertations included questions about students' professional growth and yielded additional perspectives about impact. These data have to be triangulated with the students' CVs or their self-reports in order to confirm the impact reported by faculty members.

AREAS OF IMPACT IDENTIFIED IN THE UF EDD EDTECH

Professionals in our program work in different disciplines (e.g. mathematics, science, art, foreign language education, nursing, social studies), professional contexts (e.g., higher education, K-12, nonprofit), and job roles (e.g., instructional designer, teacher, administrator, instructor). In this section, we briefly present our results from research about the impact of the program on researching professionals themselves, on their changed approaches to practice, on their application of knowledge and skills to their professional environments, and on their enculturation into the discipline and dissemination of knowledge. In addition, we report here the impact of students' dissertation research on their professional environments.

Self-Perceptions and Professional Growth

During interviews at the end of the first year, students stated that the professional doctorate had increased their confidence in their abilities and that their interactions with peers within the doctorate and with experts in professional organizations had increased their morale and broadened their horizons. The process of reflecting on their professional goals and areas of specialization, reading research critically and relating it to their professional practice, and engaging in academic discussions with professionals from multiple contexts led to new insight and knowledge, changed their perceptions of themselves as professionals and of

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their professional contexts, and helped them formulate new professional goals (Kumar, 2014a).

Students felt that new doors had opened because of their participation in the professional doctorate, and they had begun considering new roles beyond their contexts. Students had quickly assumed leadership in their organizations, advising and making decisions about technology acquisition, integration, and professional development; participating on committees; and leading initiatives. Within their first year after graduation, thirteen of the fourteen graduates in our first cohort had assumed new responsibilities, and twelve had taken on new roles (Kumar, 2014a). For example, teachers had assumed responsibilities interacting with the school board and participating in school- and district-level technology acquisition and professional development, and instructional designers had led faculty development and other initiatives related to e-learning. While several students changed jobs during the professional doctorate, many assumed new roles or started new jobs after they graduated.

Changed Approach to Professional Practice

Exposure to research and scholarly articles during doctoral coursework resulted in students making research-based decisions about buying, adopting, or implementing new technologies; bringing literature to meetings (Kumar & Dawson, 2012a); and implementing research and evaluations in their professional contexts even before they began their dissertations. The most prominent impact cited by students was related to their use of educational technology research and a data-driven approach. Students provided several examples of their new capability to read research critically, communicate research results during meetings, use research to justify their decisions, and conduct small-scale evaluation and research projects in their professional environments (i.e., K-12, higher education, corporate environments, and virtual schools). Students' growing comfort with research increased their confidence in working with colleagues and leaders on grants and policy decisions, and students were also increasingly invited to participate in grants or provide advice on decisions.

Application of New Knowledge in Professional Environments

In chapter 7, we described in detail the CoI survey that contains items on a scale of 1 to 5 about the application of learning to professional practice.

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Table 3 lists the mean ratings, cited from previous articles (Kumar et al., 2011; Kumar & Ritzhaupt, 2014), for these items in our first three cohorts. These ratings not only reveal the impact of the program but also support the fact that the consistent improvement measures that we used to focus on the quality of online teaching and learning and the connections among theory, research, and practice succeeded in improving the program for subsequent cohorts.

Table 3. Application of Learning in Cohorts 1, 2, and 3 at the End of Year 1

CoI survey statements (5 = strongly agree; 1 = strongly disagree)	**C1 Mean** (**N** = 16)	**C2 Mean** (**N** = 18)	**C3 Mean** (**N** = 14)
I have applied knowledge or skills gained from Year 1 of the program to my practice/ work environment.	4.33	4.37	4.77
I have shared knowledge or skills gained during Year 1 of the program with my peers or colleagues outside of the program.	4.31	4.44	4.77
Following my participation in Year 1 of the program, I have changed how I approach my work responsibilities.	3.62	4.25	4.46
Following my participation in Year 1 of the program, I have a better understanding of my role as an educational practitioner.	4.06	4.56	4.54
Year 1 of the EdD program has been relevant to my professional goals.	4.19	4.56	4.85
Year 1 of the EdD program has contributed to my professional growth.	4.30	4.62	4.92

In addition to the CoI survey results, student interviews, open-ended surveys, and students' CVs after Year 1 indicated that a majority of our students had applied learning from the program to integrate new technologies, create new curriculum, and write technology grants in their professional practice within the first two years of their participation in the online professional doctorate (see table 4; Kumar & Dawson, 2012a). Although the UF EdD EdTech emphasizes not the use of new technologies but rather the thoughtful and research-based integration of any

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technology in education, students were exposed to new technologies and to multiple ways of integrating and teaching with these technologies, which they applied to their professional environments.

Table 4. Application of Program Content in Professional Practice, Cohorts 1 and 2

	% of C1 after the first year (N = 19)	% of C2 after the first year (N = 18)
Adoption of research-based approach		
Introduced research, evaluation methods, and data-driven decision making	37	89
Integration of new technologies		
Integrated new technologies in teaching/ organization	84	61
Created new courses, programs, or modules	32	39
Wrote technology grant proposals	11	N/A
Enculturation into the discipline and dissemination of knowledge		
Implemented professional development (face to face and online) in educational technology for teachers or faculty	63	50
Made informal or formal presentations at the institutional, county, or district level about technology integration	37	44
Presented at regional, national, and international conferences	79	67

Students used new technologies such as a learning management system, interactive whiteboards, social media, and simulations in innovative ways in their teaching, organizations, or districts. Several students adopted research-based strategies and created theory- and research-based online materials, modules, courses, and curricula in higher education, high school science and math, middle school social studies, and elementary classrooms (Kumar & Dawson, 2012a).

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Enculturation into the Discipline and Dissemination of Knowledge

Doctoral students in educational technology come from different disciplines and backgrounds; therefore, we consider the development of scholarly thinking in the discipline an important impact of the professional doctorate. Several students joined professional organizations in educational technology and presented at regional, national, and international conferences in both educational technology and other disciplines (e.g., Online Learning Consortium; International Society for Technology in Education; American Educational Research Association; Association of Educational Communications and Technology; Campus Technology; Virtual School Symposium). Students continued to be active in professional organizations in their respective disciplines (e.g., nursing, library sciences, business education, math) during their doctoral work and also expanded their interdisciplinary and educational technology networks (Kumar & Dawson, 2014).

Increased knowledge and confidence resulted in students sharing their expertise in educational technology in the form of presentations and blended and online professional development offerings at their institutions, counties, or districts. They reported that in addition to the content of the online professional doctorate, which exposed them to research in educational technology implementation, the pedagogy used by faculty influenced the way they taught or designed curriculum in their professional contexts. During interviews, faculty members provided examples of how students were integrating research and theories in educational technology into their teaching, professional development workshops, or initiatives at their institutions. The new knowledge they had acquired and the resulting activities led to students perceiving themselves differently and to others perceiving them as experts in educational technology. Students who had published their projects or research in scholarly journals emphasized the role of the professional doctorate in helping them do so.

Impact of Dissertations in Professional Environments

Students in the UF EdD EdTech completed dissertations that were grounded in theory, research, and practice and that addressed the integration of educational technology into disciplines such as nursing,

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information literacy, public health, and academic advising, as well as into teaching and learning at all levels of education (e.g., K-12, nonprofit, higher education; Dawson & Kumar, 2014). The implementation of dissertation research in professional contexts has had significant impact for these contexts. Several of the dissertations completed in our program involved the implementation of new initiatives such as an e-learning guide, professional development for teachers and faculty, and new technologies such as iPads. Dissertations documented the outcomes of interventions and implementations, and students elaborated, during postgraduation interviews, on the ways in which these outcomes had influenced their professional contexts. For example, one student studied the implementation of a student information system, and, based on her findings and suggestions, professional development was implemented in her district. Another student designed online professional development for faculty members at her institution; researched faculty learning and application of content to their teaching; and, in order to apply her findings to other professional development offerings, improved online professional development based on her results. She also presented her research at a leading international conference. A third student studied the use of interactive whiteboards in the teaching of English in elementary classrooms and, based on his dissertation research, compiled best practices for professional development and the design of instructional materials for his context. This student later applied the knowledge he had gained in a new school context in a different country.

KEY CONSIDERATIONS

Over the three cohorts that have completed dissertations in the UF EdD EdTech, we have found different types of impact for researching professionals, both in their application of knowledge and skills to their professional environments and in the ways in which they enculturate into the discipline and disseminate their research and knowledge. Based on our experiences, we suggest some key considerations for measuring impact in an online professional doctorate.

Defining areas of impact and purpose of impact assessment. The impact of an online professional doctorate is influenced by several factors that can also serve as a starting point for defining types of impact: the goals

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of the program; the discipline in which it is offered; institutional and accreditation requirements for the format of the curriculum and the culminating research project; and the curriculum design. The impacts on context, discipline, profession, and student can take different forms during the various phases of an online professional doctorate. Consequently, those measuring impact in online professional doctorates must adopt an open-ended approach, identifying predetermined areas of impact while allowing for unanticipated impact. Some areas of impact found in the literature that can be used for impact assessment are identity or self-perception; attitudes, beliefs and approaches; application of content to the workplace; student professional growth; and changes in the professional environment. Some additional areas of impact are the hosting institution, the faculty members involved in the doctorate, and professional communities in which students participate. External and internal requirements—such as program reports, data for accreditation, and institutional guidelines—often influence the purpose of impact assessment. We have found it valuable to articulate clearly the purpose of data collection (e.g., to determine if the program is achieving its goals, to provide justification for funding) while attempting to document impact.

Collecting data related to program impact. It is important to explore how the impacts of a professional doctorate are perceived by the participants in the program, but these self-perceptions should be triangulated with other sources of data (e.g., student curricular artifacts, projects, products created by students in their professional contexts). One of the challenges we faced in the UF EdD EdTech with sources of data such as curricular artifacts or projects was that these artifacts were not designed with the goals of impact assessment in mind. Rather, they were designed to achieve program goals and were completed by students hoping to achieve approval, and they had already been graded or reviewed by faculty members in that context. The impact analysis of these products by faculty members in the program was therefore problematic. For this reason, as mentioned above, we have found it valuable to partner with researchers and faculty members not involved in the design of the program for the purposes of the data collection and analysis.

Formative and summative data collection is needed to document changes from the standpoints of process and product. Additionally,

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these different types of data collection allow program designers to make revisions to an online professional doctorate during a program offering (formative data collection) and for subsequent program offerings (summative data collection). Both formative and summative data collection require time and resources not always available to program leaders or faculty. They present several additional challenges in an online professional doctorate: for example, data are usually from participants' self-reports and require triangulation using other sources, and data must be collected using technologies such as Skype and telephone. Although students and graduates might be comfortable using these technologies to talk about their experiences, their employers or colleagues might not. Furthermore, collecting data about impact on the professional environment can sometimes require gathering sensitive information that cannot be shared by those in the student's professional context.

Ensuring program fit and student engagement. In addition to aligning impact metrics and purpose with the goals of the specific online professional doctorate, clearly communicating program goals to prospective students can contribute to program impact. In the UF EdD EdTech, we require program applicants to read the articles we have published about the program during the admissions process so that they can determine how our program can further their professional goals, since professional students are usually quite clear about why they would like to pursue a terminal degree. Based on their personal goals, identity, and stage of career, students are asked to define their own goals for their doctoral studies and to develop a plan to achieve those goals. Notwithstanding the value of purposeful design, the impact of an online professional doctorate is largely dependent on the extent to which professional students engage with the curriculum and peers and combine theory, research, and practice for application in their professional contexts.

Examining student professional development and partnerships with faculty. In our program, the focus on student professional growth, student research interests, the relevance of program content to professional environments, student enculturation into a discipline, and student reflection on professional goals and learning have contributed to positive impact for students, according to data collected during student interviews (Kumar & Dawson, 2014). Throughout the program, we scaffold

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the connections among theory, research, and practice and conduct research-relation-oriented mentoring in which dissertations are driven by students' research interests, leading to multiple opportunities for impact on professionals and their work environments. These practices do not always align with the research agendas or grants of faculty members, but they have, for the most part, aligned with faculty areas of expertise and research interests. Regardless of the degree of alignment, graduates of our program have partnered with faculty to present at conferences, to publish, and to participate in decision making in professional organizations. Faculty members have found that students who are motivated to share their scholarship beyond their professional contexts tend to do so despite the constraints of time and multiple commitments. Although research has shown that graduates of professional doctorates typically remain within their professional community (Costley, 2013), we have found that our model for the online professional doctorate has largely resulted in graduates engaging in the academic community or professional organizations in the discipline even if they have not done so before. An open-minded approach to the kinds of partnerships, research, and scholarship that may result from dissertations in an online professional doctorate is essential while measuring impact.

Creating a climate for impact in the professional context. Most students, while completing the UF EdD EdTech, have worked in professional contexts that support their doctoral endeavours and that encourage the application of theory and research. However, if a professional student's institution or professional context is not conducive to that kind of encouragement, the impact of an online professional doctorate can be limited. For example, a professional environment with strict confidentiality agreements may encourage the implementation of research but not allow the sharing of those results outside of that context. When students are being admitted to our program, we alert them to the importance of a professional environment that is supportive, and we ask them to inquire about the possibilities of implementing projects and research in their contexts. Informing their organization or institution about their participation in a terminal degree gives employers and colleagues the opportunity to involve students in projects in which their expertise may be useful.

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CONCLUSION

Our discussion of impact in this chapter is largely based on our model for the online professional doctorate—one that provides students with opportunities to connect theory, research, and practice. Nevertheless, our suggestions for the definition, categorization, and measurement of impact in an online professional doctorate can be useful to those engaged in other types of professional doctorates and even in doctorates that are not offered online. Several students in the UF EdD EdTech have emphasized in their interviews and open-ended survey responses that the online nature of the doctorate significantly contributed to its impact. It provided them with opportunities to immediately and continually apply their learning throughout the doctorate, to reflect on their learning with peers, and to revise and share their approaches and research as they progressed.

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Further Considerations

The past decade has seen an increase in the number of professional doctorates offered in the United States, the United Kingdom, and Australia due to economic pressures, the need to implement research in the professions, and the drive to prepare a highly educated workforce (Kot & Hendel, 2012). This expansion has occurred alongside a convergence of online education and the need for doctoral education for professionals. In this book, we assert that professional doctorates and research doctorates are distinguished by the purpose of the degree rather than by its rigour. In short, research-oriented doctorates like the PhD prepare "professional researchers" while professional doctorates like the EdD prepare "researching professionals" (Bourner et al., 2001, p. 71). We also make the case that the online environment is an ideal medium in which to offer a program for professionals who would like to immerse themselves in theory and conduct research while remaining embedded in their practices.

Specifically, this book presents our model for online professional doctorates designed to prepare researching professionals, who combine foundational and theoretical knowledge in their disciplines (sometimes in more than one discipline) with knowledge of research in their contexts in order to conduct research that will primarily, but not exclusively, improve their professional contexts. Knowles's (1980) andragogy, Mezirow's (1990) transformative learning theory, Lave and Wenger's (1991) work on situated learning, and the research base for online learning provide, in combination, a robust framework for the design of learning experiences in our model. Based on five years of study and three design and research iterations, we present our model as one that others can use

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when building a rigorous doctoral program for professionals in any discipline that aims to bridge theory, research, and practice and that is offered completely, largely, or partially online. In this conclusion, we share considerations for offering an online professional doctorate based on lessons learned while offering our program for researching professionals.

Numerous institutional structures and supports need to be in place to offer any online program. In 2009, a large-scale study on online learning identified "key organizational strategies, processes, and procedures that contribute to successful and robust online learning initiatives" (McCarthy & Samors, 2009, p. 5). The study was based on interviews with 241 administrators, faculty, and students, and more than 10,700 faculty survey responses from forty-five public institutions of higher education in the United States. The institution-wide issues related to online learning identified in this report are quite similar to those identified in reports from other countries, including the Australasian Council on Open, Distance, and e-Learning (Sankey et al., 2014) and the European Association of Distance Teaching Universities (Williams et al., 2012). The issues include faculty incentives, course life cycle issues, senior administration, academic quality and effectiveness, administrative and financial models, and technology.

Although these institutional issues are beyond the direct control of most faculty members (like us) who design online professional doctorates, it is important for program designers to understand how these issues are addressed at their institution. They must also recognize that even if their institution is mature in terms of offering online programs, many of these fundamental issues may "resurface or emerge in new ways" as programs evolve and, in particular, as different types of online programs are offered (McCarthy & Samors, 2009, p. 6).

We have found this to be true in our context. We work in an environment that is relatively mature in terms of offering online programs; in fact, the online graduate programs in our College of Education (which include our educational technology program) are currently ranked as the best in the United States by *U.S. News and World Report*.[1] Yet designing and implementing an online professional doctorate has required us

1 "Best Online Graduate Education Programs," *U.S. News and World Report,* 2017, http://www.usnews.com/education/online-education/education/search?school-name=university+of+florida.

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to rethink many issues and has challenged some existing institutional structures and supports. Below, we discuss three broad areas (program, faculty, and support) in which we have experienced various challenges, and we present considerations that others may want to take into account as they design and offer an online professional doctorate.

PROGRAM CONSIDERATIONS

Numerous resources are available to faculty members to help them develop quality online programs (e.g., the Quality Matters framework [http://qmprogram.org] and the OLC Scorecard [http://onlinelearningconsortium.org/consult/quality-scorecard/]) and online courses (e.g., the Blackboard Exemplary Course Program Rubric [Blackboard, 2012] and the Rubric for Online Instruction [https://www.csuchico.edu/tlp/resources/rubric/rubric.pdf]). Many institutions have also developed their own frameworks for this purpose. For example, our university has developed the UF Standards and Markers of Excellence (http://teach.ufl.edu/wp-content/uploads/2012/08/UF-Standards-and-Markers-of-Excellence1.pdf). Faculty who are offering or planning to offer online professional doctorates must familiarize themselves with program-related standards and policies at their institution but must also recognize that these documents probably will not encompass everything they need to consider. We present some of these additional considerations based on our experiences offering the UF EdD EdTech.

Collaboration with Other Online Doctoral Programs

Our college offers three online doctoral programs, including the UF EdD EdTech. One program is offered outside our department and is conceptualized as a PhD program. The other one, focused on curriculum, teaching, and teacher education (CTTE), is offered in our department and is designed to prepare practitioner-scholars, or "professionals who bring theoretical, pedagogical, and research expertise to bear on identifying, framing, and studying problems of practice and leading informed change in their schools and districts to continually improve learning conditions for students and adults" (Adams, Bondy, Ross, Dana, & Kennedy-Lewis, 2014, p. 366). Both programs necessarily influence ours,

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the most salient example of this being the research requirements for online doctoral students in our college (discussed in more detail below). Faculty members across the three programs also serve as members on dissertation committees for the other programs.

The focus here is on how collaborative relationships among similar programs can be beneficial. Faculty members from the UF EdD EdTech and CTTE program regularly communicate with each other about their respective programs; coordinate course schedules and campus visits by cohorts so as to not overtask the college's physical infrastructure; and share conceptual ideas and strategies related to the design, implementation, and evaluation of the programs. Although CTTE targets a more homogeneous audience (practitioners in K-12 environments) and adapts a different model (a professional practice doctoral model as proposed by Shulman et. al. [2006]), we have learned a lot from each other and we work collaboratively toward educating other faculty members in our department and college and developing a positive reputation related to the quality of online doctoral programs in our department. Others wishing to initiate an online professional doctorate within their discipline will benefit from extending a collaborative hand to similar programs and developing programmatic and individual relationships based on mutual respect and a culture of sharing.

Experience in Online Learning and Teaching

Prior to beginning an online professional doctorate, we had extensive experience teaching online and coordinating online programs in our discipline of educational technology. We also had a comprehensive understanding of the research related to online teaching and learning and, in fact, have been contributing to that knowledge base for years. Similarly, most of our students have at least minimal experience working in online environments, and some are expert practitioners in this area. These experiences and understandings enabled our students and us to adapt with ease to the online medium.

Faculty and students from other disciplines may not have such knowledge and may need to take time to learn about online teaching and learning before embarking on an online professional doctorate. Similarly, students may need an introduction to and practice with the online environment prior to beginning the program. They may also initially

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need additional support learning to learn and communicate online. Orienting students to the learning management system, the resources they will use in the online program, and online learning in general is crucial to their success in all online programs, and especially in an online doctorate, during which they are also expected to work independently at a distance from campus.

The Admission Process

We have found the admission process to be one of the most important components of offering an online professional doctorate. It is imperative that the individuals accepted into the program understand the goal of becoming researching professionals and have a desire to achieve it. It is also important that they understand and are able to adhere to all requirements of the program, including active participation in the online community and in on-campus experiences. We therefore recommend that faculty offering online professional doctorates put considerable effort into the admission process. Indeed, the process needs to be one "that treats people fairly, does not create a burdensome system for applicants or those involved in the selection process, and ensures the selection of a solid foundation of high quality candidates with whom faculty can mentor, who add value to the program, and who can benefit from the program" (Perkins & Lowenthal, 2014, p. 27).

A recent informal review of the admission processes at seventeen institutions offering online doctoral programs in fields related to educational technology found great variability in admission requirements, from a minimal application process including online reference and official transcripts to more rigorous and thorough processes involving statements of purpose, writing samples, letters of recommendations, and CVs (Perkins & Lowenthal, 2014). Our admission process leans toward the more rigorous and thorough end of this continuum, since our doctoral applicants provide transcripts, GRE scores, letters of recommendation and writing samples, and a purpose statement that explains how the online professional doctorate will help them meet their career goals and what it is about the program that intrigues them. We also require them to submit a letter of agreement stating that they understand and are willing to comply with the requirements of participating in the online community and attending all campus-based sessions.

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All program faculty review completed applications. Since there are always more applications than slots in the cohort, we begin by whittling down the pool to those who seem like potential candidates. It is generally easy to identify people who are applying to the program because they think online degrees are easy to obtain, those who did not take the time to carefully consider how their career goals align with the goals of the program, and those who are not particularly invested in becoming researching professionals. And, of course, there are those applications that cannot even be considered because they do not meet the university requirements.

Rather than ask potential candidates to submit videos addressing certain questions or issues, as some institutions do (Perkins & Lowenthal, 2014), we schedule telephone interviews with the pool of potential candidates. Regardless of the process employed, we recommend that faculty get to know potential candidates beyond the required application packet. Although this is time consuming for faculty, we have found that these efforts monumentally increase the likelihood of having a successful cohort of students who reach the goal of our program—to become researching professionals.

We try to schedule back-to-back telephone interviews, typically on a weekend, so that we can carefully consider each applicant alongside the others. We ask questions about why they are applying to the program, how they are currently engaged in their profession, and what types of reading they do within it. We have found that individuals who are already engaged in their field and reading within it are more likely to succeed at becoming researching professionals. We also ask questions about their practice, including what they might like to study within it and whether they are likely to have the support needed to conduct research in their contexts. As we have learned through the experiences of some of our students, it is very difficult to merge theory, research, and practice if research cannot be conducted within the student's practice. We also allow time for the potential student to ask us questions. We have found that this interview process enables us to select individuals for whom the program is likely to be a good fit.

Design of On-Campus Experiences

We did not meet on campus with our first cohort until after their first academic year of coursework. This on-campus experience proved very

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fruitful, and a stronger community was clearly evident by the end of the week, as evidenced by both increased traffic in the online community from that point forward and feedback from students (Kenney et al., 2013). Others have also written about the importance of on-campus experiences during online doctoral programs (Jones, Warren, Ennis-Cole, Knezek, Lin, & Norris, 2014; Adams et al., 2014).

We recommend considering carefully the on-campus experiences associated with online professional doctorates. While our department offers completely online MEd and EdS programs that work quite well without on-campus experiences, we have found such experiences to be an important component of our model for online professional doctorates. We carefully integrate the online coursework, online community, and campus-based experiences to accomplish the goal of preparing researching professionals who can merge theory, research, and practice.

Each cohort in our program is now required to attend a two-day on-campus orientation before the beginning of the first academic year. We use this orientation for students to get to know each other and the faculty; to plan their online community structure; to become familiar with basic university procedures, including the library system; to meet administrators; to secure their university ID numbers, which are essential to all university processes from registration to graduation; and to tour the campus and see the surrounding area.

The second time students visit the campus is for four days after their first academic year is complete. We build on things learned during the year; provide scaffolds to further develop online community; provide opportunities for them to practice scholarly presentation skills; and prepare them for what is coming during the second year, such as an increased emphasis on academic writing, an increased expectation to use library resources effectively, and an expectation to understand university policies related to research (i.e., Institutional Review Board policies). We also explain the qualifying exam process, which will culminate during the on-campus experience after the second year of coursework.

The third on-campus experience involves the oral qualifying exam process. (Written exams are submitted a couple of months before the on-campus experience.) If students pass their qualifying exams, which 90 percent of them do, they advance to doctoral candidacy. The dissertation mentoring process also begins during this time, with students meeting individually and as a group with their dissertation mentors.

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During the third or fourth year of the program, depending on their timetable, students come to campus for their dissertation defence. Whenever possible, students also come to campus for the dissertation proposal meeting. The final time that most students are on campus is for their graduation, when cohort members can celebrate with each other at the formal ceremony as well as at an informal gathering that we host for them before the ceremony.

Communication with Students

Consistent and reliable communication with students is essential within our model for online professional doctorates. We begin this communication by having a well-maintained website where potential students can learn about our program, see dissertation titles and current positions of graduates, and read open-source articles published about the program (http://education.ufl.edu/edtech-edd/). We also have an email address dedicated to inquiries about the admission process.

The program coordinator serves as the first line of communication for those seeking admission and for students already enrolled. She sends regular messages to all students. Individual faculty members communicate with students about the specifics of coursework, but all informational items about the program, such as dates for synchronous sessions and university deadlines, come from the program coordinator and are copied to the other faculty members. Other programs offering online professional doctorates may find a different arrangement more suitable, but considering how to consistently and reliably communicate with students is vital to the success of any program.

Distinctions Between Program Advising and Dissertation Mentoring

Good communication is a crucial part of the relationship between student and adviser in all doctoral education (Gardner, 2007; Zhao, Golde & McCormick, 2007), but it is even more critical in online doctoral programs, especially in terms of the consistency of communication that students receive from their advisers (Kumar & Dawson, 2012a). In fact, issues related to advising can challenge both students and faculty within online programs (Exter, Korkmaz, & Boling, 2014).

In our program, the full-time faculty member serving as program coordinator functions as the program adviser for all students until they

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become doctoral candidates after passing qualifying exams, at which point they begin working with their dissertation mentors. The program coordinator addresses issues such as programs of study, transfer credits, and elective courses. The cohort nature of our model makes these tasks very similar among students, and we strive to take care of as many of these issues as possible during the on-campus orientation session. However, individual differences arise, especially in terms of transfer credits and electives, and the program coordinator handles those issues. Having one person serve as the program adviser for the entire cohort helps streamline the process and ensure accuracy. Once students pass qualifying exams, they begin to work with their dissertation mentors. Distinguishing between advising and mentoring is a strategy employed by other online doctorates as well (Exter, Korkmaz, & Boling, 2014).

Online Spaces to Support Community

An online community is an essential component of our model for online professional doctorates. Community is most frequently viewed through the lens of individual courses; however, we encourage those offering online professional doctorates to consider establishing online spaces that transcend coursework. We have explored numerous mechanisms for achieving this, from a tool developed in our college to commercial products such as Google Groups and Facebook. Through these various attempts, we have come to believe that the tool is not as important as the concept, since the many tools available to support online community tend to have similar features. The more important issue is understanding the importance of community, establishing broad expectations for what should occur in the community, and scaffolding students to take ownership of their own communities over time. During the on-campus orientation, for example, we put students in charge of choosing the tool they will use for their community, and throughout the first year, we set up activities that gradually shift control of the community from faculty to students.

Courses Specific to the Online Doctorate

Our Ed Tech program offers multiple degrees and sometimes the same course is required across degrees. For example, Foundations of Educational Technology is a course required by all five of our degrees (PhD,

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EdD, MAE, MEd, and EdS). However, we have found that offering courses specific to the online professional doctorate is helpful for several reasons. First, it helps establish community among students. Second, it enables the instructor to modify course content and assignments to meet the specific needs of researching professionals (including activities related to developing scholarly thinking) and to fit within the unique course sequence of the degree. Third, it helps with administrative issues such as planning for staffing and registration. This is not to say that every course should be specific to the online program. Our students choose electives from a variety of courses, which gives them an opportunity to interact with those outside the program and enables individualization during the program. We have carefully selected the courses we believe are best suited as program-specific courses, and each faculty member in the program teaches one of them. This enables faculty and students to get to know one another on a deeper level.

While we recommend that other program leaders consider including program-specific courses in their design of an online professional doctorate, institutions organize courses in online doctoral programs in multiple ways. For example, some employ a distributed model in which existing doctoral courses are transitioned to an online format to accommodate off-campus students (Jones et al., 2014); a small-group hybrid model, whereby groups of students at different locations meet synchronously with a professor who is alone in an on-campus studio; or a shared-portal model, whereby online students access a face-to-face class on campus synchronously via video-conferencing technology (Henriksen et al., 2014).

Research Courses Appropriate for Researching Professionals

One of the biggest challenges we have had in terms of coursework in our program is finding ways to offer research courses appropriate to a professional doctorate, an issue that is not unique to our program (Marsh, Dembo, Gallagher, & Stowe, 2010). In fact, many professional doctorates still have research requirements aligned to those of PhD programs, although concerted efforts are underway to make such courses more practical to match the goals of professional doctorates (Bengston, Jones, Lasater, & Murphy-Lee, n.d.). The challenge of offering appropriate research courses for professional doctorates is often magnified when

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the program is online (Adams et al., 2014; Dawson, Cavanaugh, Sessums, Black, & Kumar, 2011).

Within our context, we have had to address challenges at both policy and instructional levels. At the policy level, our college has a set of research requirements for doctoral students. The policy was developed for on-campus PhD students and requires that all the research courses be taught on campus through the research and evaluation program in our college. We had to work through faculty governance channels to modify the policy to include online courses for researching professionals. As with most changes in faculty policies, this was challenging and was not met with enthusiasm by all faculty members—particularly those not supportive of online education in general or those who believe the research doctorate is only one kind of doctoral degree our college should offer.

Once the policy change was approved, we worked at the instructional level to help those teaching the courses to better understand the needs of researching professionals. Although there was interest in developing courses to meet the needs of our students, there was a disconnect between our understanding of the research methodology field and their understanding of researching professionals and of teaching online. This disconnect has been reported at other institutions as well (Baldwin, 2015; Bengston et al., n.d.).

Because the online courses offered within the program did not receive adequate support, issues of faculty availability arose. These courses continue to be a challenge, and we continue to work with our colleagues who are teaching them. Although institutions without policies about research courses may experience fewer challenges, determining what research courses for researching professionals should look like is difficult regardless of institutional policies. Similarly, regardless of institutional policies, we believe it is important to engage with colleagues in research and evaluation programs to ensure that the research courses align with the needs of researching professionals. In our view, these courses should be rigorous; include qualitative, quantitative, and mixed methods that can address a range of problems of practice; provide students with opportunities to work with both predetermined data sets and with data sets from their own unique contexts; enable students to conduct independent research during their dissertations and as researching professionals following graduation.

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FACULTY ENGAGEMENT

Faculty engagement is a crucial component of a quality online programs; however, a gap frequently exists between an institutional aspiration to grow online programs and the level of faculty engagement (Seaman, 2009). Low levels of faculty engagement relate to a number of factors, including a perception that the time commitment involved extends far beyond offering classes on campus, a lack of institutional support and incentives to offer online courses, and a belief that online courses are inferior to campus-based courses (Seaman, 2009). However, it is likely that readers of this book fall into the growing percentage of faculty members and other higher-educational employees who are becoming engaged in online teaching and learning in order to meet students' needs through flexible access and reach students who don't have access to traditional campus-based classes and programs. For this reason, we do not address issues associated with faculty acceptance and adoption of online learning here. Instead, we focus on faculty considerations that are particularly pertinent to offering online professional doctorates.

Developing and Maintaining Collaboration and Cohesiveness

The traditional notion of faculty operating in isolation has been deteriorating for some time now (Gappa, Austin, & Trice, 2007), and "successful online learning programs usually operate across a wide range of academic and administrative units, which in many ways run counter to the traditional, often 'siloed,' manner in which campuses conduct business and teach students" (McCarthy & Samors, 2009, p. 13). Even so, we believe that the importance of collaborative and cohesive faculty is magnified in our model for online professional doctorates because students move through the program as a cohort and because the various aspects of and courses within the program are interwoven with each other and with the theoretical foundations on which they are built. Not only does the cohort structure open up excellent opportunities for students to develop online community, but it also enables students to share every detail about their program experience with each other, including feedback and conversations with faculty. If faculty members are not on the same page in terms of program expectations, the student experience can be confusing or, even worse, feel inequitable. This is not to suggest that faculty members become clones of each other but rather that faculty members'

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understanding and support of the program design, implementation, and evaluation is essential.

We have developed and maintained the collaborative culture among faculty in the online professional doctorate through regular meetings about the program and through collaborative research related to the program, which often guides conversations during our meetings. While these meetings do not always bring about unanimous agreement, decisions are made with collegiality and respect, enabling us to continue fostering a collaborative culture.

If a culture of collaboration and cohesiveness already exists among the program faculty, it must be consciously maintained during the design and implementation of an online professional doctorate. If these qualities do not already exist, it is critical to develop them before offering such a program, and if they are unattainable, faculty should carefully consider whether offering an online professional doctorate using our model will work for them.

Diversity of Faculty Experiences

In an ideal world, faculty working within an online professional doctorate would have a range of experiences beyond academia in order to support the purpose of the degree—to merge theory, research, and practice to prepare researching professionals. Our faculty have professional experiences that include K-12 teaching, instructional design for corporate and postsecondary settings, postsecondary distance education, faculty support services, and international education. Each of these experiences beyond the professorial role helps us to better advise, mentor, and understand our professional students. While it is not always possible to hire individuals specifically for one degree (we offer five different degrees in our Educational Technology program and we each work across all programs), we recommend taking into consideration the needs of professional students when hiring new faculty and compiling a faculty team with as much experiential diversity as possible.

Program Coordination and Leadership

Each member of our program team is committed to and supports the design, implementation, and evaluation of our online professional doctorate. However, having a program coordinator or someone who champions the program has been instrumental to its success and continual evolution.

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During the early years of our program, the program was more or less run by committee, with each faculty member supporting it in different ways at different times. This was a difficult configuration to sustain, because no one had direct responsibility for the program. During the second cohort, we hired a faculty member whose main assignment is to coordinate and lead the online professional doctorate. This program coordinator oversees all aspects of the program; contributes to the collaborative culture discussed above by engaging the faculty in meaningful conversations, planning meetings, and decision making; and leads the research and evaluation efforts related to the program.

It is important to note that this person is a full-time faculty member, not an adjunct or administrative assistant (although we discuss the need for such a person later in this chapter). We recommend that those starting an online professional doctorate take a similar approach to program leadership. A full-time faculty member can be fully invested in the program and is considered a colleague by those outside the program, which enhances efforts to gain support for the program from those outside the discipline.

Support for the Program Among Faculty Members

Faculty members with online teaching experience tend to have much more positive views of online education than those who have never personally engaged with it (Seaman, 2009). However, even in institutions like ours, where the majority of faculty accept online learning, an online professional doctorate may be a novelty. This makes it very important to share information about the program and to garner support and a positive reputation among colleagues. We did this through presentations at faculty meetings, publications shared with colleagues, and informal workplace conversations. As discussed earlier, our relationship with the CTTE program also helped here.

Most of our colleagues are supportive of our program, although a few either do not understand or do not support a doctoral degree that is anything but a traditional research PhD. Others (albeit a shrinking number) still do not support online learning despite its prominence in higher education. We suspect there will always be colleagues with these views, and the best we can do is to respect their views and continue to offer a quality program.

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While collegial support is critical to maintaining a healthy workplace culture, at our institution, it is also essential that colleagues outside the program area be willing to participate in the online professional doctorate because all doctoral dissertation committees must have three members from within our department and one external member, someone within our college but outside our department. Other institutions offering online professional doctorates may have similar policies related to dissertation committees.

When the program began, we recruited student-centred colleagues who we felt understood and supported the goals of our program to participate on committees. Because our professional students do not reside on campus, their dissertation adviser selects their committee members based not only on the student's work context and research interests but also on the potential committee member's understanding of and skill with working with online students. Students are able to review faculty profiles and make requests for certain faculty members if they wish. Given that even on-campus doctoral students often struggle to compile a committee that is able to provide the needed expertise (Roberts, 2010), this approach seems particularly appropriate for online students.

The committee members evaluate written qualifying exams, attend the oral qualifying exam, provide feedback on the dissertation prospectus, and attend the dissertation proposal meeting and the dissertation defence. The oral qualifying exam process occurs during the break week between Summer A and Summer B, which often does not allow our colleagues who teach in both sessions to participate on committees. We discuss the associated workload issues for these colleagues later in the chapter.

INSTITUTIONAL AND PROGRAM SUPPORT SYSTEMS

"Online learning programs succeed with consistent and adequate academic, administrative, and technological resources for faculty and students" (McCarthy & Samors, 2009, p. 5), and a perceived lack of support is one of the main reasons faculty shy away from online teaching and learning. Support varies across contexts but typically involves central information-technology support; a technological infrastructure that includes a standard learning-management system, instructional design

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and technical support for course development; and implementation and student support services. These support systems must be in place before discussions about offering online professional doctorates can happen. However, despite the fact that our institution does offer support for online education at the university and college levels, we have discovered areas in which support needs related to our online professional doctorate need to be reconsidered.

Faculty Workload

Not surprisingly, faculty workload is a major issue for online teaching and learning in general and is magnified for online professional doctorates. The biggest challenges that we have faced in this regard relate to the on-campus experiences, the qualifying exam and dissertation processes, and the involvement of colleagues outside our program.

The on-campus experiences present numerous challenges. During the regular semester, for example, faculty simply do not have the time needed to participate fully with the cohort, and parking for off-campus students cannot be secured. Thus, we hold the on-campus experiences during the break week between the Summer A and Summer B sessions, when faculty, in theory, are available and parking is plentiful. However, currently faculty are not compensated for the time spent with the on-campus experiences over break week. The third on-campus experience takes place when the cohort takes the oral portion of qualifying exams, which means we need to find many colleagues, sometimes a dozen or more, who are willing to devote their summer break week to sitting in on oral exams; this, of course, involves reading the written exams in advance. These same colleagues must commit to reading a dissertation prospectus and proposal and to attending a dissertation proposal meeting and defence later in the process. Our college provides no compensation to these individuals for their generous support of students. In fact, we fear that as we admit more cohorts and as our college offers more online doctoral programs, we will find it much more difficult to recruit individuals willing to make these commitments without appropriate compensation—compensation that is limited due to our university's policies.

Even if our program faculty members and other committee members received appropriate compensation, the workload would still be intense. Mentoring students through a dissertation takes a great deal of time and

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mental and emotional effort. Given the cohort nature of our program, students tend to move through the qualifying exam and dissertation processes at similar times, so each faculty member in our program could be mentoring six researching professionals through the dissertation process while simultaneously working with a few students from previous cohorts who are behind schedule and mentoring PhD dissertations, MAE theses, and MEd and EdS culminating projects. And, of course, this work occurs in tandem with other faculty requirements such as teaching courses, conducting research, and providing service to the college and university and the faculty member's profession. We know of programs in which individuals have been hired specifically to mentor students during the dissertation stage and of some in which the dissertation requirements have been modified to make the workload more manageable for faculty. We are interested in the impact these decisions have on the quality of program and look forward to reading about how such strategies work for others when that information becomes available. In the meantime, we consider it important to work with administrators to address these issues adequately. Since designing our program has been an iterative process over eight years, we only became cognizant of faculty workload issues as they arose during that period. If we were to begin our program again with the knowledge we have gained, we would address issues of faculty workload before starting the program, and we encourage others to do just that.

Support for Faculty Members Teaching in the Program

Although our educational technology faculty members had extensive experience with online teaching and learning before we began the online professional doctorate, many of our colleagues who teach in the program did not. We provided support to these colleagues by helping them understand the goals of our program and how their courses fit within the larger program design. These colleagues also received support from a faculty support office in our college, and all courses ended up being designed according to the quality indicators adopted by our institution. However, a quality course design does not always lead to quality implementation. Faculty members have varying abilities to adapt to the new challenges of teaching online courses and to understand the goal of merging theory, research, and practice to develop researching professionals.

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Whenever possible, we carefully select who teaches in the program, but we do not always have direct control of these choices. Regardless of how these decisions are made, we recommend taking the time to help faculty members understand the unique nature and purpose of an online professional doctorate and how their course fits into the larger design of the program. Existing personnel in an institution for online course development (e.g., instructional designers, media specialists) can provide valuable assistance with the development of individual courses. We also recommend learning as much as possible from instructors about what they consider the key features and content of their course. A professional and collaborative relationship with faculty members outside the program helps them to realize how important their course is to our program and how much we value its content, and it also tends to result in continual efforts to improve the courses.

Administrative and Student Support Needs

Despite the fact that support is essential to online initiatives, it is an area where many institutions fall short, which is one of the reasons why faculty members have negative perceptions of online teaching and learning. Like the other issues mentioned in this chapter, support issues are magnified in online professional doctorates and require additional considerations (Exter et al., 2014; Kumar & Dawson, 2012a).

In an ideal world, we would have a staff member dedicated to our program whom we could explicitly train to understand the needs of students in our various degree programs and especially those of our online doctoral students. However, in most institutions, this is simply not feasible. We have a generic student support centre and a staff person assigned to the program for a couple of hours a week to help with some of the administrative aspects of the program; however, much of the support work still falls to the program coordinator, since online professional doctoral students often need different types and levels of support than is typically provided by the administrative and support staff in our college.

For example, the program coordinator works directly with our student services office to ensure that the cohort courses are offered at the appropriate times and that the right students are enrolled in them. At certain points during the program, this person also has a reduced teaching load to compensate for the many responsibilities associated with this role.

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The program coordinator also deals with all student inquiries about the program; the student communication and program advising mentioned above; the admission process, including coordinating application reviews and setting up interviews; and the formation of dissertation committees, coordination of the written qualifying exams, and scheduling of oral exams. While most of these duties could feasibly be done by administrative or student support personnel, these employees have neither expertise about our program nor the allocated time to learn about the program and work on these tasks. The reduced teaching load helps the program coordinator in terms of providing time to offer administrative and student support services, which is helpful but not ideal, as her time could be better spent on work that is more aligned with her faculty expertise and on continually improving the program. We recommend, if at all possible, that others offering an online professional doctorate obtain a staff person who is assigned exclusively to the role of program assistant.

Strong Relationships with Support Personnel

At various times in our program, we work closely with different individuals in our institution. During admissions, qualifying exams, and dissertation work, we help our department's coordinator of graduate studies and his staff with planning efficiently for the increased workload that comes during these times. During registration, we liaise with our student support services centre, since, as mentioned earlier, they have neither adequate staff nor expertise to support our students on their own. At certain times, we interface with our Institutional Review Board, particularly as related to international dissertations; with the library staff and the finance department; and even with our university's housing department, to provide the most economical options for our students during their campus visits. Determining areas outside of the program that will impact an online professional doctorate and forging positive working relationships with employees in these areas is essential.

CONCLUSION

Offering any online program involves the use of innovative methods of teaching and learning that require "the support of technologists, the engagement and expertise of academics, the interest of students, and a

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strategic and financial commitment at every level of the organization" (McCarthy & Samors, 2009, p. 13). Not surprisingly, institutions have varying levels of readiness for and success with online learning initiatives. Those initiatives are most likely to be successful in the presence of a clear institutional vision, a strategic plan, effective organizational structures, a sustainable funding model, and strong leaders with effective communication skills. However, online professional doctorates require considerations beyond basic infrastructure and support for online learning, and it is incumbent upon faculty members designing these programs to be cognizant of these considerations. Our online professional doctorate is constantly evolving, and we certainly have not figured everything out, but we hope that what we have learned through our experiences and research and have shared in this book provides insights that are useful to others. We welcome the opportunity to dialogue with others about how their own programs compare with the model presented in this book.

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