COLLABORATIVE DESIGN OF PROFESSIONAL GRADUATE PROGRAMS IN EDUCATION

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Faculties of Education in North America are experiencing an increase in demand for professional graduate programs that provide flexible and accessible research pathways for working professionals. Our School of Education offers high quality professional graduate programs that increase access and respond directly to complex needs and problems of practice in education. We describe the design and design thinking approach our faculty collectively undertook to redesign our professional graduate programs. The design was guided by a commitment to research informed and research active learning experiences that enable professionals to develop expertise, draw upon evidence, and act with integrity as they lead innovation and change in educational organizations. The program design provides professionals with opportunities to complete their graduate program in both blended and online formats. Degree programs are cohort based, discipline focused, and coherently structured. Many of our specialized topics are developed in partnership with the professions we serve, and each of our graduate programs is grounded in current research and engages students in active research-based learning. Participatory, collaborative, and interdisciplinary learning experiences are characterized by signature pedagogies. Our professional graduate programs create scholars of the profession through strong connections with the disciplines, communities, and professions we serve. Results of the redesign include improved results in student satisfaction, time to completion, increased retention, and have yielded high completion rates. Design knowledge and insights gained after eight years of evaluation document the strength and quality of our graduates and an increased proportion of international students in all of our graduate program areas.

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INTRODUCTION

Professional educators are being challenged to create solutions to complex educational problems for a more diverse, inclusive, and equitable society. In response to changing global conditions, faculties of education must invest in graduate education and take a serious look at the design of their graduate programs and the ways in which each course contributes to research active and research informed learning experiences that help professional educators to develop,

design and evaluate innovative solutions to complex and pressing problems and issues in education.

The knowledge, skills and dispositions needed to be an outstanding professional practitioner in today's rapidly changing world requires that universities revision their professional graduate education programs. The re-visioning of graduate education must consider structural, organizational, curricular, and pedagogical renewal. We (the authors) describe the process and outcomes of a collaborative approach to redesigning professional graduate education in one Canadian School of Education. In addition to providing a detailed description of the design, we also include key decisions made during the design process, and design insights gleaned from the first eight years of the intervention, to inform the work of others.

Like many other Faculties of Education in Canada and the United States, we are engaged in an ongoing process of re-envisioning graduate education to emphasize ways to engage the profession in deep and meaningful scholarship that advances and strengthens professional practice and advances knowledge in both the professions and the disciplines. Challenges that our redesign process addressed were similar to those cited by Willis, Inman, and Valente (2010) and common to many graduate programs, such as high attrition rates, lengthy times to completion of doctoral and masters programs, fragmentation of courses and programs, a proliferation of narrowly defined specializations that were disconnected from professional practice, and a lack of flexibility and accessibility for students who wanted to continue full time work in the profession while pursuing blended or online graduate education.

In 2010, our School of Education underwent a significant programmatic examination and review of all existing graduate degree programs, including the Doctor of Philosophy (PhD), Doctor of Education (EdD), Master of Arts in Education (MA), Master of Science in Education (MSc), Master of Education (MEd) and Master of Counselling (MC). Faculty members carried out self-studies of programs and identified each specialization's future goals for research-intensive graduate programs (PhD, MSc, and MA) and for professional graduate programs (EdD, MEd, and MC). This process of self-study and examination of all program pathways yielded several important insights. First, we found there was little to differentiate our PhD and EdD degrees from each other or to distinguish our MA and MSc degrees from our MEd and MC degrees. Second, we discovered that an alternative masters graduate pathway within our Faculty, established in 2002 as a graduated framework of graduate certificates to graduate diplomas as steps toward a master's degree, was being utilized as a default exit pathway for students who were unable to successfully complete the master's degree, rather than as an alternative and flexible laddered pathway to a master's degree. A Graduate Programs Task Force, charged with creating a new vision for graduate

education, recommended changes to the nature and structure of the School's graduate programs. The two of us contributed to the self-study and review process and were assigned the responsibility of working with colleagues and the recommendations to reinvent the graduate programs within our School. Drawing upon research from the Carnegie Foundation for the Advancement of Teaching's Project on the Education Doctorate (CPED) (see http://cpedinitiative.org/) (Golde & Walker, 2006), the Spencer Foundation (see http://www.spencer.org/content.cfm/research), current trends and an assessment of learning outcomes in tertiary education from the Organization of Economic Cooperation and Development (Tremblay et al., 2013a; Tremblay et al., 2013b; Braun et al., 2013c) and the Council of Ministers of Education Ministerial Statement on Quality Assurance of Degree Education in Canada (CMEC, 2007), a significant restructuring and research informed redesign of all graduate programs within our School was undertaken.

REIMAGINING OUR PROFESSIONAL GRADUATE PROGRAMS

As articulated within the CPED, professional EdD and MEd graduate degree programs must be built upon the highest levels of formal academic study and/or research in a given field or discipline and need to be oriented towards stewardship of the profession (Richardson, 2006; Shulman et al., 2006; Walker et al., 2009). Our School's revisioning and remapping of the EdD and MEd programs, including the previous alternative laddered master's degree program (certificate, diploma, masters), focused on the design of innovative, current, and practitioner-oriented doctoral and master degree programs to facilitate the development of future and current educational professionals with the knowledge, skills, and dispositions to analyze and solve authentic problems of practice and to succeed in leading and studying change. The practitioner-scholar model was firmly embedded within a conceptual preparation framework based on research that indicates the optimal learning for adults, especially professionals with a rich background of experience, involves interactions between the characteristics that experienced professionals bring to the learning situation, the experiences in which they engage during the learning process, and the environments in which they learn. To realize this philosophy and model of preparation, our EdD and MEd degree program designs all incorporate a cohort model that is constructed on principles underlying communities of learners, signature pedagogies, and learning environments that embrace theories of participatory knowledge-building (Scardamalia & Bereiter, 2006), knowledge-producing systems (Scardamalia, 2002) and communities of practice (Lave & Wenger, 2002; Wenger, 2000).

In order to draw upon the rich expertise and diverse experience that faculty members bring to graduate programs, a collaborative program and course design approach was used

by two working groups of faculty members who taught or held a deep interest in the research and specialization courses. One working group of nine faculty members reviewed existing research courses. This group found primarily generic qualitative and quantitative methods courses with the occasional course on a particular methodology or research approach tied to an individual professor. A second group of faculty members, three from each of the seven specialization areas in the School, reviewed the specialization courses. This group's initial review revealed a potpourri of courses that could be taken in any order, with no apparent consideration of a throughline or deliberate mapping to program goals. The working groups were tasked with developing program goals in each specialization, and with revisioning and reorganizing existing courses and with creating new courses, to cohere with revised program goals. Faculty members had agreed, in principle, that the revised professional program designs would be based on a practitioner-scholar model in which students progressed through the program in a cohort, and instructors incorporated signature pedagogies in the design of their courses and in their teaching.

PRACTITIONER-SCHOLAR MODEL

As the working committees reviewed the research in the field and formulated a composite profile of the graduate students in the program, they also found that the exponential growth in educational research and knowledge in the profession, the expansion of competencies educators required to be successful practitioners, and increased use of technology for informal and formal learning, required graduate programs in education to better prepare practitioners for advanced leadership and practice roles.

The two working groups presented findings from their review at a faculty town hall meeting, along with the proposed restructured professional graduate program designs that were firmly situated within a practitioner-scholar approach, and an educative model that focused on research-informed and research active, participatory research and pedagogies. While there was active discussion at this meeting, faculty in attendance endorsed the design recommendations that were put forward. With the support of the faculty, the two working groups now gathered additional members and undertook the applied work of designing and developing the specialization and research courses to ensure that the courses and sequence provided a demanding, coherent, robust, respectable, and high-level academic experience that would educate graduate students as leaders of professional practice in the fields of education and psychology.

After three months, multiple meetings, and many working sessions and consultations, and a second townhall meeting, the two committees finalized a proposal that professional graduate programs each have a carefully and deliberately designed sequence such that students would experience both depth and breadth through their degree. The committees proposed the structure of the programs be cohort-based and bear signature pedagogies. Within a cohort model, students who took the majority of their classes together at a distance could come to know, trust and support each other. The signature pedagogies would assist students in making reflexive connections between the course content and their lived experiences within their respective professions; thereby, increasing the authenticity, relevancy and applicability of the course material for praxis.

Agreement was once again sought from academic colleagues. Several faculty members expressed concerns about sequencing of courses as it was felt that it reduced student choice and would require a high degree of collaboration among those who were assigned to teach the courses. The majority of faculty members admitted they knew little about signature pedagogies. The largest concern was about the level of support that would be required for instructors. After two town halls, and much discussion, the majority of faculty agreed to proceed with developing both the cohort model and the signature pedagogies for our School's professional graduate degrees.

COHORT MODEL

A signature structure that is integral to the design of our professional graduate programs is the student cohort. This key decision was made early in our design process. The cohort approach to designing programs assumes that an intact group of students start and end their degree program at the same time, and they progress through a coherent set of courses and intentionally designed program of study in which each course builds and extends on the previous course. The cohort enables student members to engage in sustained academic and professional dialogue within a learning community that develops and is sustained over time. Students engage in shared learning and research experiences as a group. The student cohort within intentionally designed and sequenced programs stands in sharp contrast to more traditional open enrollment approaches to graduate programs where students self-select from menus of course options, enter and exit programs at different intervals, and exhibit wide range in time to completion.

Drawing upon conceptual and research literature on exemplary professional graduate programs in education (Golde & Walker, 2006), we embraced the cohort model for designing and delivering our professional graduate programs. Learning is fundamentally a social process that is carried out with the aid of mediated tools (Vygotsky, 1978). Vygotsky contended that the most fruitful experience in learners' educational processes occur when learners interact, in a context, with more experienced peers and teachers who provide "intellectual scaffolds" that help them perform complex tasks than would not be possible alone. Interpersonal learning activities

that enhance social presence may also result in enhanced social integration of learners, and hence improve the quality of learning, and course and program completion rates in both on-campus and online programs (Joyce & Brown, 2009). Donaldson and Scribner (2003) found student cohorts have particular appeal to adult learners because of the peer support aspect of the structure. Further, research suggests, and it has been our experience, that the cohort model structure scaffolds and supports improved student learning through deeper discussions, which are the foundation for professional networks that support learners' future leadership roles and serve as a scaffold for building collaboration and communication skills (Anderson, Annand & Wark, 2005).

Regardless of instructional context, establishing a community of learners enhances the student experience, increases belonging and improves outcomes in professional graduate programs (Anderson, 2003; Garrison et al., 2000; Rouke, et al., 1999; Rouke & Anderson, 2002; Scardamalia, 2002). In a community of learners, students learn by working together and becoming part of a larger community. Students collaboratively construct knowledge; they do not take it in as it is disseminated but instead build on knowledge they have gained previously (Anderson, 2009; Bransford et al., 2000; Garrison & Anderson, 2003). Edens (2000) noted,

> A new approach emphasizes the students' active role in constructing knowledge and students' actively engaging in inquiry and problem solving, typically in a collaborative framework. Learning is anchored to real-world or authentic contexts; students learn how to apply inert knowledge to real problems...Problem-based learning holds promise as a teaching tool that provides for the acquisition of problem-solving skills to meet the challenges of the twenty-first century workplace. (p. 55)

The documented affordances of a student cohort design, from intellectual scaffolds, the social construction of knowledge, cultivation of a community of learners, peer support and sense of belonging, and problem solving in a collaborative framework, convinced us of the value of this signature structure for quality learning, student retention and student success in all of our professional graduate programs. This description of our cohort-based programs illustrates how graduate students can be brought together to examine their practice thoughtfully and systematically in a research community focused on innovation in education (Olson & Clark, 2009).

SIGNATURE PEDAGOGIES

Professional schools of education face a challenge: their pedagogies must measure up to the standards of not just the academy, but also of the profession of education. A second key decision in our design process was assigning signature pedagogies to our professional graduate programs. Professionals must learn abundant amounts of theory

and vast bodies of knowledge in order to bring research informed perspectives to bear on the complex problems of learning and practice that they are called upon to address. Professionals must come to understand that in order to act, they must become knowledgeable, develop expertise, draw upon evidence, and act with integrity. Signature pedagogies are forms of instruction used in the preparation of members of caring professions (that is, the salient, pervasive teaching practices that characterize a field):

> Signature pedagogies are types of teaching that organize the fundamental ways in which future practitioners are educated for their new professions. In these signature pedagogies, the novices are instructed in critical aspects of the three fundamental dimensions of professional work— to think, to perform, and to act with integrity (Shulman, 2005, p. 59).

An issue we faced in revisiting our EdD and MEd programs was how best to frame forward-thinking, innovative, and effective signature pedagogies within professional graduate education. Our two working committees not only examined the surface structure of various signature pedagogies (what the teaching looks like) but also the deep structure (theories and assumptions about teaching and learning in the field) and the implicit structure (beliefs about what should be valued in the field, including professional dispositions). The committees' work was informed by CPED's research on stewardship in the profession (Golde & Walker, 2006), and signature pedagogies that reflect "what counts as knowledge in a field and how things become known" (Shulman, 2005, p. 54). Thus, signature pedagogies are viewed as the route to preparing a steward of the profession and as the desired outcome of our professional graduate programs, which is exceptionally well-prepared *stewards of the profession*; therefore, our principal role was to determine the signature pedagogies that would foster the essential competencies and qualities for that role in each course and program. Therefore, determining which signature pedagogies would be prioritized in our program design required numerous meetings, debates, and consultations within the faculty.

In the sections that follow, we identify and describe the signature pedagogies that were agreed upon and incorporated into the design of our professional graduate programs. These signature pedagogies are rich beginnings for building analytical processes that prepare students to lead and study change and to offer them opportunities to learn from both theory and experience.

Inquiry-Based Learning

An inquiry-based approach to learning requires learners to actively engage in knowledge building. "Inquiry-based learning is a dynamic process of coming to know and understand the world in genuine and authentic ways that take their cue from how knowledge actually lives and works in the world

(Friesen, 2013a, p. 153). In *inquiry-based learning* students are presented with a challenge (such as a question to be answered, an idea to be examined, an issue to be explored) and accomplish the desired learning in a process of responding to that challenge. Presented with a challenge, such as design a learning experience that reflects social-constructivist principles and activities, graduate students are invited to work collaboratively to seek and gather information and resources to address the challenge, draw upon diverse experience and expertise, critically analyze and synthesize ideas, and build knowledge that is shared and improved upon within the learning community. Inquiry-based learning is found to be more effective than traditional instruction for improving academic achievement and the development of thinking, problem-solving, and laboratory skills (Darling-Hammond, 2008; Friesen, 2013a; Haury, 1993; McReary et al., 2006; Oliver-Hoyo & Allen, 2005; Oliver-Hoyo et al., 2004).

Problem-Based Learning

Using problem-based approaches to learning in our professional programs, students frequently work in teams that are confronted with an ill-structured, open-ended, real-world problem of practice to solve. Students are required to take the lead in precisely defining the problem, identifying assumptions, figuring out what they know and what they need to determine, and planning how best to proceed to address the problem. Sourcing and drawing upon rich resources related to the problem, students formulate and evaluate alternative solutions, select the best one and make a case for it, and evaluate lessons learned. When students identify the need for instruction on new material, the instructor either provides it or guides the students to obtain the required information themselves. A meta-analysis of the effectiveness of problem-based learning (Dochy et al., 2003) suggests that students may acquire more knowledge in the short term when taught conventionally but are likely to retain knowledge longer when taught with problem-based learning. Given our graduate program's focus on developing leaders who can address complex learning needs and problems of practice in diverse organizational contexts, a problem-based approach to learning offered an authentic, robust and applied approach to developing deep understanding. Prince and Felder (2006) summarize robust positive effects of PBL on development of a variety of problem-solving skills, conceptual understanding, ability to apply meta-cognitive and reasoning strategies, teamwork skills, and even class attendance. "Perhaps it cannot be stressed enough, PBL is not merely the layering or the addition of problems onto conventional practice; rather, PBL requires new approaches to course design, instruction and assessment" (Friesen, 2013b, p. 248).

Case-Based Learning

In *case-based learning*, students collaboratively study historical or hypothetical cases involving scenarios likely to be encountered in professional practice. Students are challenged to explore their existing preconceptions and modify them to accommodate the realities of the cases (Lundeberg & Yadav, 2006). Compared to typical problems used in problem-based learning, cases tend to be complex, relatively well-structured and rich in contextual details, and require the application of material that is already somewhat familiar (Lohman, 2002). For example, a case-based approach to problem identification and the design of solutions is used with doctoral students in a design-based research seminar. Doctoral students work in interest-based teams on selected cases that reflect problems of practice in primary, secondary or tertiary contexts, analyze the case to identify the key problem that needs to be solved, and draw upon the literature to collaboratively develop research informed solutions along with an implementation and evaluation plan. Lundeberg and Yadav (2006) carried out a meta-analysis and concluded that cases have a positive impact on faculty and student attitudes, class attendance, and faculty perceptions of learning outcomes. They also note the reported comparisons of the effectiveness of case studies versus traditional instruction depend strongly on the assessment tasks and that "the higher the level of knowledge and thinking required on the assessment task, the more likely that case-based teaching will produce greater gains in student understanding (p. 10)".

DESIGNING A DISTINCT EdD

To highlight the design process for our degree pathways, we detail the process we undertook in the design of our EdD in the sections that follow. The first problem the working team encountered was that the existing doctoral degree pathways, the PhD and EdD, were identical in all respects, except the latter was offered in blended and online formats and the former was offered on campus. The first design task was to clearly distinguish between the two doctorates. Informed by existing research and the work of the CPED on the doctorate and guided the Council of Ministers of Education Ministerial Statement on Quality Assurance of Degree Education in Canada (2007), the working team created distinct program descriptions for our School's PhD and EdD degrees (Table 1).

The next task was for the committee to determine the ways that the EdD program would be designed using the cohort model and signature pedagogies. While the committee originally entertained alternative forms of a capstone project for the doctorate, upon consulting with the Dean of the Faculty of Graduate Studies, the group was told that all doctoral students must complete an independent dissertation. The committee relayed this decision to the faculty members and proceeded within this requirement to the next three decisions. These design decisions were critical as the majority

	EdD—SCHOLAR OF THE PROFESSION	PhD—SCHOLAR OF THE DISCIPLINE
Primary Career Intention	Evidence-based leadership and practice in educational institutions or related organizations.	Scholarly practice, research, and/or teaching at university, college, institute or educational organizations.
Degree Objective	Preparation of professional leaders and scholar practitioners competent in identifying and solving complex problems in education. Emphasis is on developing new solutions to problems of practices as well as developing thoughtful, critically reflective practitioners who are fully able to enact an evidence-based practice.	Preparation of professional researchers, scholars, or scholar practitioners. Develops competencies in educational scholarship and research that focuses on acquiring and generating new knowledge in the discipline.
Knowledge Base	Understands theoretical and conceptual knowledge and uses this to develop and apply knowledge for practice. Research-based content themes and theory are integrated with practice with emphasis on application of a knowledge base.	Fosters theoretical and conceptual knowledge. Content is investigative in nature with an emphasis on understanding the relationships to leadership, practice, and policy.
Research Methods	Develops deep understanding of inquiry, research and evaluation for participatory research methodologies: design-based/action research methods. Developing competencies in research design, analysis, synthesis, and writing.	Courses develop deep understanding of inquiry, qualitative and quantitative research methodologies. Developing competencies in research design, analysis, synthesis, and writing.
Candidacy	Candidacy portfolio containing three components: research proposal, specialization papers and a reflective self-analysis paper. The candidacy examination is based on the research proposal as evidence of the student's background knowledge in their discipline and preparedness to conduct research of high quality in their particular field of study.	The dissertation research proposal contains the following components: a foundation component demonstrating background knowledge in the discipline, a literature review specific to the proposed research, and the proposed research methodology. The candidacy examination is based on the research proposal as evidence of the student's background knowledge in their discipline and preparedness to conduct research of high quality in their particular field of study.
Dissertation	Original research dissertation with the clear goal of informing and creating new educational practices with relevance to the profession and disciplinary knowledge.	Original research dissertation with the clear goal of informing disciplinary knowledge.
Supervisory Committee	Composed primarily of active researchers in areas relevant to students' areas of interest.	

TABLE 1. Comparison of EdD and PhD Programs.

of students would undertake their doctoral program from a distance, and most would be working professionals who would complete their doctoral degree while working full time. We decided the EdD program needed to: 1) exploit the affordances of technology enabled knowledge producing systems; 2) create participatory learning environments to draw upon learners' experiential expertise, and thus acknowledge the students as legitimate contributors to advancing knowledge within the cohort; and 3) establish opportunities within a structured laboratory of practice for students to engage with problems and issues in education to scaffold

preparation of a research proposal for candidacy. While the working group agreed that signature pedagogies provided many opportunities to engage with real problems of practice across the program, they decided there was a need for at least two required course-based learning experiences so that students could draw upon each other's knowledge and experience to collectively advance their understanding of research processes as these relate to formulating a research proposal designed to address a real problem of practice. Our design solution involved creating two laboratories of practice in the second year of the doctoral program.

Technology Enabled Knowledge-Producing Systems

Deciding to utilize the affordances that networked technologies provide to create online learning environments for collaborative knowledge building was an important decision point in our redesign. This decision complemented the signature pedagogies in which students were invited to address authentic problems of practice in coursework. The addition of systems to build sustained scholarly discourse that treated all ideas as improvable and thereby creating a community in which all students take responsibility for the overall advancement of knowledge in community was a goal (Scardamalia, 2002; Scardamalia & Bereiter, 2006, 2010; Scardamalia et al., 1994). However, implementing technologies that allow students to follow ideas in order to improve upon them was a challenge given existing institutional investments in mandated systems. Threaded discussion forums in learning management systems that we reviewed were not up to the challenge of fostering knowledge building. We addressed this gap by creating pedagogical guidelines for creating communities of scholarly discourse, peer review and participatory learning environments for instructors and students.

Participatory Learning Environments

With decentralized access to information, connected expertise and collaborative online workspaces, the roles of the educational institution and the educator shift from source, location and disseminator of knowledge to the means of accessing, interpreting, extending and challenging that knowledge. We drew upon the ideal of cultivating participatory learning environments and the co-creation of meaning. Drawing upon the work of Jenkins et al., (2006), Sawyer (2006) and Thomas and Brown (2011), we determined that several qualities of participatory learning environments would be actively designed into our professional graduate courses and programs. For example, the expectation that a culture of inquiry supports idea creation and the sharing of creations, and that opportunities for expression and engagement by all members of the learning community, was built into graduate courses and across each program. In participatory learning environments, learners are socially connected with one another and expertise is distributed such that the most experienced in one area serves as mentor to other members of the learning community. Graduate students bring diverse knowledge, expertise, and experiences to graduate study and through peer learning, peer review, collaboration and knowledge sharing in community, can and do learn to develop and contribute to group memory and knowledge building as a collective responsibility and endeavor (Bereiter & Scardamalia, 2010; Clifford & Friesen, 1993; Hattie, 2009; Jacobsen, 2010; Jacobsen & Friesen, 2011; Jenkins, et al, 2006; Sawyer, 2007; Thomas & Brown, 2011).

Laboratories of Practice (Collaboratories)

Collaborative laboratories of practice (collaboratories, collabs) (Shulman, 2007) are places of praxis—settings where theory and practice inform each other. These are structured, scaffolded, and socially connected experiences of complex, messy, real-world practice that serve as initial sources of active inquiry, critical thought and action, and participatory research. In writing about the practical and conceptual features of doctoral programs, Shulman (2007) argues, "the wisdom of practice is a necessary but ultimately insufficient basis for teaching and pedagogical action" (p. 561). Values, vision of the possible, and theoretical conceptions of learning, teaching, development, justice, and equity must also be drawn upon to create a scholarly profession (Schulman, 2007).

The original design work for the EdD collaboratories of practice provided an innovative approach for our School to scaffold students through the research proposal writing and thinking processes. Working group meetings led by the associate dean and director of professional programs included faculty members from across disciplines who engaged in often heated and lively conversations about "what constituted research within a professional program". Over a period of 12–18 months, common course outline templates were created and agreed upon for the two collabs, along with guides to assist students and instructors with the research proposal. Common texts were selected. The design of the two collabs supported doctoral students through conceptualizing and writing two major components of a research proposal. All design work for the collabs was collaborative, and often messy and complex, as we learned how to work in interdisciplinary ways to convey expectations for educational research that focused on change and innovation in education.

Within our collaboratories of practice (collabs), students were offered multiple opportunities to explore and examine authentic problems of practice to expand their experiences within their specialization area and expose them to alternative contexts, responsibilities and roles in research. The collabs were designed to leverage the strengths of a student population that comes from diverse educational contexts, to provide opportunities for students to view work in a context and actively interact with each other on problems of practice, and those of the profession, and to serve as sources of active inquiry, critical thought and action, and participatory research with each other. As well, the collabs provided opportunities for a cohort of students, with diverse expertise and experience, to collaboratively discuss various problems of practice, work through the research literature and methodology of the particular problem of practice. The goal was to promote critical inquiry that addressed important issues related to teaching, learning, and leading in order that collaboration and knowledge building among colleagues could be enhanced. Through their own participatory research designs, EdD students were expected to apply and

enrich their knowledge of research, professional literature, and other relevant knowledge to their professional work and leadership roles and learn first-hand how to evaluate research, translate research into practice and conduct research and program evaluations for continual improvement of learning and for mobilization and use of knowledge.

The EdD collaboratories, which were a student-focused design element meant to support cohort-based learning, and involve a supervisor, an instructor, and the cohort working in collaboration to support each student in formulating a strong research proposal, was initially met with a great deal of suspicion and resistance from some faculty members. This resistance to the collabs has tended to lessen over time but has not disappeared. Supervisors did not understand the intent of the collabs at first, so the Associate Dean organized many workshops for both instructors and supervisors to orient both instructors and supervisors to this collaborative and participatory approach to graduate supervision. Originally, in the selection of instructors for the collabs, the program drew upon senior scholars who understood and supported the EdD program design and had taught and or supervised many doctoral students. Later, a broader range of scholars from across the program, who understood and supported the intent of the collabs, were assigned to teach the courses. As the courses and programs were timetabled, we brought instructors from across sections together to discuss the intent and objectives, to have some sort of consistency, to build expertise, to share strategies, and so on. When the program had to place an instructor, who by collective agreement requested to teach the collab, but who did not agree with, understand or support the program design, did not wish to engage in collaboration, and instead taught the course in isolation, there was often mixed and limited success for students and for supervisors.

CONTRIBUTIONS TO LOCAL DESIGN KNOWLEDGE

The re-design and collaborative creation of the EdD resulted in a robust blended doctoral program with signature structures and signature pedagogies, a practitioner-scholar approach, a cohort model, a prescribed and coherent course sequence including participatory research courses, two collabs, a research proposal and candidacy exam, and culminated in a dissertation (Table 2). This section highlights contributions to local design knowledge that continue to inform our ongoing design work.

Co-Design of Courses and Program

Unlike many EdD programs in which faculty members individually design graduate courses based solely on their research interests and expertise, and graduate students build their programs by selecting from a range of course offerings, the working group organized and led collaborative

design committees with representatives from all seven specialization areas to create the specialization courses for the EdD program. As a first step, a working session was held that included the working group, course development committee members, and representatives from the College of Alberta School Superintendents. A course structure and sequence were co-developed by this larger group. The working committee held a School Town Hall during which the overall structure and sequence of the EdD program was debated and agreed to. While involving practitioners in course designs was important to the overall strength and relevance of the new program, it was not without challenges. Practitioners and faculty members seldom agreed on the theory-practice blend in the courses. However, both groups came together once we reviewed the signature pedagogies to ensure that problems of practice would be at the core of the program and within each of the courses. Each course required students to engage with both theoretical and applied knowledge. Our collaborative course and program design process resulted in an EdD program that offered a prescribed, coherent and relevant course sequence and program design that could be completed within a predictable time frame by working professionals who engaged in high-quality field-focused research on problems of practice.

Promoting Collaboration

Implementation of the new EdD design involved coordination and leadership to identify and select instructors, to intentionally bring together instructors from multiple sections of the required research courses, collaboratories, dissertation seminars, specialization courses, to discuss and consider the common course outline templates & course objectives in planning and teaching the courses. The associate dean and director of professional programs worked to intentionally build a community of practice around the original designs of the Action Research, Design Based Research, and Participatory Research Methodology courses, both to include, value and enculturate junior faculty, and also to support more experienced faculty, in contributing to and adjusting to the new courses and program design. Exceptional success has been experienced with collaborative design and teaching of the Action and Design-Based research courses; however, the required participatory research course, taken by all doctoral students, has devolved into an undifferentiated set of experiences that do not serve all students well. This course is now under revision. Within each specialization, the academic coordinators were tasked with building a community of practice around the specialization courses so there was coordination and coherence in how the four courses were conceptualized, designed and taught. This collaborative process has met with mixed success as individual or outlier faculty or specialization groups who are unsupportive or unaware of the program design choose to individually design and teach courses outside of the design.

Purpose	The EdD is a thesis-based degree, intended for educators for the generation of new knowledge and practices, and for stewardship of the profession. Our EdD is an innovative, current, and practitioner-oriented doctoral program designed to facilitate future and current educational professionals to develop the knowledge, skills, and dispositions to solve authentic problems of practice and succeed in educational positions.
Philosophy and Model of Preparation	The EdD is firmly situated within a practitioner-scholar approach, a preparation model that is focused on research-informed, evidence-based practice. EdD graduates are scholars and highly prepared professional practitioners who apply knowledge and techniques to solve authentic problems of practice. The EdD program incorporates state-of-the-art signature inductive pedagogies and pedagogical tools; in situ opportunities designed to facilitate the critical application of research and theoretical knowledge; a cohort model constructed on the principles underlying communities of learners; a candidacy portfolio; an oral candidacy examination; and original research dissertations.
Program Requirements	The EdD is a cohort-based prescriptive program requiring the completion of ten courses of study, a candidacy examination, and doctoral dissertation. Students complete two half-course equivalent research courses, four half-course equivalent specialization courses, two half-course specialization laboratories of practice (collabs), and two half-course equivalent dissertation seminars. Students submit a candidacy portfolio that includes a research proposal. The research proposal is subject to candidacy examination before their 28th month in the program. The culminating project is the completion of a dissertation which is subject to oral examination.
Mode of delivery	The EdD program is provided through various formats. Although largely an on-line program, participants attend a required on-campus summer residency during the first two years of the program.
Candidacy Requirements	The academic regulations of the Faculty of Graduate Studies apply to the candidacy examination and the dissertation oral examination.
Dissertation Requirements	
Time to completion	Through a cohort-based, prescriptive framework and continuous support in dissertation development, students will typically complete requirements within three years, and are required to complete within six registration years.

TABLE 2. Current EdD Program Design.

KEY DESIGN INSIGHTS

While our School of Education has continued to revisit various components of the redesign of professional graduate programs through collaborative teaching teams and committees, the program structure of the initial MEd and EdD designs have remained largely intact as these have proven to be very successful for students based on feedback from regular program evaluation, from curriculum review (Jacobsen et al., 2018a) and action research on program design (Jacobsen et al., 2018b) and from external measures of student satisfaction and success. Graduate Programs in Education conducted regular focus groups with current students and exit surveys of all graduates, both of which provided the School with insights and direct feedback on the students' experience in graduate school, on program quality, and on supervision. Data from program administered focus groups and exit surveys was used to inform continual program improvements, such as adjustments to the timetable, range of program topics offered and timing of orientations and events.

In 2014-15, Graduate Program in Education engaged in a curriculum review of the professional programs (Brown et al, 2015). Interim results on actions taken in response to recommendations indicate a strong commitment to both student engagement in research and faculty development to continue to enhance teaching capacity. Action research carried out on our graduate programs (Jacobsen et al., 2018a) describes the value of team-teaching research courses in the MEd, signature pedagogies, collaborative approaches to curriculum mapping and course delivery, and ongoing review of programs.

Better differentiation of our graduate programs has resulted in improvements in student satisfaction in all our program areas. Results from the 2016 Canadian Graduate and Professional Survey (CGPSS), a national survey of graduate student satisfaction and experience by the Canadian Association for Graduate Studies (https://cags.ca/cgpss/) indicates that Master of Education (MEd) student rates of overall satisfaction with program increased 11% in three years, from 74% in 2013 to 85% in 2016. Other results are just as encouraging, doctoral (PhD and EdD) student satisfaction

with supervision increasing 3% from 2013 to 2016 to 90.5% of students indicating high rates of satisfaction.

An area of improvement captured by our Internal Office of Institutional Analysis is doctoral students' mean time to the candidacy exam. In 2010, prior to implementing the new doctoral program designs, doctoral students' mean time to candidacy exam was 32.9 months, which was 4.9 months past the requirement of 28 months. In 2016, the doctoral students' mean time to candidacy was 26.4 months, which is 1.6 months earlier than the requirement and also represents an overall program improvement from 2010 to 2016 of 6.5 months.

The program design changes we have outlined also enabled us to increase the proportion of international graduate students in our programs through cohorts. For example, cohorts of international students have been recruited to our degree and non-credit initiatives through our partnerships with Beijing Normal University, Shaanxi Normal University, and the China Scholarship Council. Graduate students have also been recruited to our School through our partnership with Osaka YMCA Schools, Japan. Graduate Programs in Education has obtained grant funding to support new program design and curriculum review focused on attracting international students.

CONCLUSION

Building upon the insights gained through the process of self-study and examination of our graduate programs, and a critical review of the literature on the design of graduate program structures, signature pedagogies and from the learning sciences, we increased the scope, quality and reach of our research and professional programs. Our School of Education now offers two distinct doctoral programs in educational research, two distinct masters programs, and we have leveraged an existing graduated framework of graduate certificates to graduate diplomas as steps toward a Master of Education degree. Programmatic changes successfully implemented over the past eight years have yielded a slate of high-quality professional research programs of choice in the School of Education. The design of high quality and accessible professional graduate programs that respond directly to the needs of the profession has attracted a great deal of interest and engagement of the profession, as indicated by increased applications to the program each year, and also by new relationships with professional partners on the design of programs to address identified needs of the profession, of the provincial education ministry, and of school jurisdictions. The signature cohort design, which incorporates intellectual scaffolds, the social construction of knowledge, intentional mentorship and peer support, peer review, cultivation of a community of learners, and problem solving in a collaborative framework, has resulted in high quality learning experiences related to professional leadership and practice,

increased student retention, shorter times to completion and greater coherence and inter-disciplinarity in all our professional graduate programs.

Along with program redesign, Faculties of Education need to be mindful of ongoing faculty development. In many faculties of education, academic staff hold deep scholarly knowledge, expertise, and experience in research and in their discipline. However, many faculty members have not experienced the types of graduate education that our redesign expects them to provide; namely, few faculty members have experience working with signature structures, signature pedagogies, cohort models, participatory learning environments, collaborative course design and or team teaching, and collaborative online work spaces.

Blended and online graduate education has become mainstream in our School along with the expectation that all faculty members learn to design and teach blended and online courses as part of their course-based teaching workload. The expectation that all faculty teach in the redesigned professional graduate programs has amplified the need for on-going, continuous professional development for all faculty and instructors. Strategies for addressing faculty development and support include, and are not limited to, the scaffolding of course design, established program evaluation frameworks, the consolidation of research and specialization courses, the support of collaborative approaches to course design and teaching (Brown et al., 2013; Jacobsen et al, 2018a), increased resources for graduate assistant teachers, and additional specialized support staff in the Office of Graduate Programs. Support for teaching in the School is supported through a senior leader, the Associate Dean of Teaching and Learning, who works collaboratively with the Associate Deans of program areas to focus programs, support and training initiatives directly on faculty professional learning and educational development.

In this paper, we have documented the transition from conventional on-campus, loosely designed, and undifferentiated graduate programs to blended and online, coherent, robust and intentionally designed professional graduate programs along with residency graduate programs. Our strategy to increase access and respond directly to the needs of a profession and province in transition was to draw directly upon the latest research on graduate education, and to engage with the communities and professions that we serve as we redesigned our programs. Our blended and online Education Doctorate, Specialist Masters, and Interdisciplinary Masters degrees are cohort based, discipline focused and coherent. The redesign of our graduate programs was in response to the pressing need to move away from information delivery approaches to scholarship, and towards participatory and collaborative learning experiences characterized by signature structures and signature pedagogies.

Graduate students deserve to be engaged in technology en-abled research active learning experiences, to engage collab-oratively in solving real problems of practice and to develop as scholars who will lead and study change in education. Our graduate programs have been intentionally designed to cultivate scholars of the profession in programs that demonstrate strong connections with the community and graduates who provide leadership in their organizations and professions that are in transition. One way that we measure our success is by the strength and quality of our graduates, the high retention and completion rates, and meeting the demands and needs of the profession and the Ministry of Education by providing accessible and flexible graduate school learning experiences for working professionals.

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