Doctoral Education for a Sustainable Future: What's a Comprehensive Portfolio Got to Do With It?

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Abstract

In this paper, we introduce a Joint PhD Program in Educational Studies taught jointly by three universities in Ontario Canada, discuss the role of the comprehensive portfolio in research education, and share our vision for sustainable doctoral education and a sustainable future locally, nationally, and internationally. We debate the importance of the comprehensive portfolio for student retention, the development of the 21st century learning skills, mentoring, self-as-scholar competences, and holistic doctoral education. We explore foundational questions: What works? What does not work? What is missing? Finally, we conclude with critical reflections and recommendations for doctoral-level studies with reference to key stakeholders including graduate students, mentors, curriculum developers, doctoral program directors, and policy makers.

Key words*: Canada; holistic doctoral education; mentoring; PhD in education; 21st century learning.*

Introduction

Doctoral studies are considered foundational in most Canadian universities. Historically, Canadian doctoral programs have embraced the traditions of early programs developed in Germany throughout the early 19th century in terms of being research focused and research intensive (Archbald, 2011; Kot & Hendel, 2012). The focus on research, inquiry, and problem solving clearly differentiated the Germanic model from the then more mainstay educational approaches that emphasized knowledge transmission and recitation (Kot & Hendel, 2012). With this model, the graduate seminar emerged as a central instructional format, with graduate training

intended to promote individuals to think "critically, empirically and creatively" (Archbald, 2011, p. 8).

Today, doctoral studies continue to demand intensity, reflectivity, and depth in scholarly pursuits (Holliday, 2016; Jairam & Kahl, 2012; Powers & Swick, 2012). Research-intensive studies have become pervasive throughout postsecondary institutions across Europe and North America and have given rise to the full-time, residential doctoral programs with an emphasis on the completion with the doctoral dissertation. For the most part, such traditional research programs are oriented within the humanities, physical sciences, and social sciences (versus the professional disciplines) and are housed on traditional campuses with lecture-style classrooms, laboratories, and libraries. These programs typically require 2-3 years of coursework, a residency interval, and several more years invested in the completion of the dissertation. Students, in turn, tend to be early career, young adults (usually male) who are able to devote time and resources to full-time studies typically ranging between 5-7 years (Wendler et al., 2010) while receiving modest financial support typically in the form of teaching and research assistantships or scholarships (Archbald, 2011). Within this model, completion of doctoral programs was intended to be the foundation for producing the subsequent generations of university researchers, scholars, and educators (Kot & Hendel, 2012).

In contrast to the 3-year doctoral degree that was imported to North America over a century ago, present-day median PhD time-to-completion rates are considerably longer. Between 1970 and 2000, times-to-completion increased from 6.5 to 11 years (Elgar, 2003), with most students requiring a minimum of five to six years of full-time study to earn their degrees (Maldona, Wiggers, & Arnold, 2013). In one study exploring graduation rates within just half of the top research intensive universities in Canada, 78.3% of students in the health sciences and 55.8% of students in the humanities successfully completed their PhDs within nine years (Tamburi, 2013).

Similar concerns arise with respect to program retention, with attrition rates for doctoral studies being 50% high in some programs in North America (Cassuto, 2013; Maldona et al., 2013; West, Gokalp, Pena, Fischer, & Gupton, 2011) and ranging from 40% (Kyvik & Olsen, 2014) to 90% (Agency for Science and Higher Education, 2014) in Europe. Lack of preparation for graduate studies, lack of supervision, inadequate support during the dissertation-writing process, and pressure to publish contribute to extended completion rates (Bayley, Ellis, Abreu-Ellis, & O'Reilly, 2012; Lovitts, 2001; Maslov Kruzicevic et al., 2012). Furthermore, Kyvik and Olsen (2014) reported not only attrition factors related to the doctoral training system, the doctoral program, and the research environment, but also to the doctoral candidates, the cultural and social context, and differences between academic fields.

Completion rates are lower in the humanities and social sciences than in the natural sciences and technology (Sadlak, 2004). One of the reasons for such low rates in the humanities and social sciences might lie in the common practice of doctoral students choosing their own research topic while in the natural sciences and technology this

decision is often guided by the supervisor, enabling a quicker start and an adequate research design (Gemme & Gingras, 2008).

Additionally, in the natural sciences and technology disciplines, doctoral students are often "part of a research team, the supervisory relationship is closer, and co-publishing with supervisors is more common. In the experimental sciences in particular there is a close link between the work done by PhD students and the research interests of their supervisors" (Kyvik & Olsen, 2014, p. 1672). Such close collaboration between students and supervisors often results in an increased research productivity (e.g., publishing, presenting, and grant-writing), which is positively related to degree completion (Larivière, 2011). For example, Larivière (2011) found that of the 30,000 students who entered PhD studies in Quebec between 2000 and 2007, those who published papers were more likely to graduate.

According to Holley and Caldwell (2012), the student-advisor relationship is critical for becoming a scholar. Unfortunately, this relationship is often considered to be lacking, especially in distance education (Holmes et al., 2010; Pyhalto et al., 2012). Furthermore, Brill, Balcanoff, Land, Gogarty, and Turner (2014) argued that the student-mentor relationship may be problematic, "resulting in the student turning to another faculty member or student for support, and disrupting the mentoring process" (p. 27). Financial constraints, emotional stress, personal challenges, and familial responsibilities are also associated with high attrition rates. Collectively, these factors may contribute to an overall dissatisfaction with the doctoral program (Gregoric & Wilson, 2012; Pyhältö, Toom, Stubb, & Lonka, 2012; West et al., 2011), sense of isolation, especially in distance learning programs (Pyhalto et al., 2012), and disillusion associated with realizations of diminished prospects for securing tenure-track faculty positions (Tamburri, 2013).

Despite these challenges, there seemingly is an overwhelming interest in doctoral studies, with the overall number of graduate enrolments quadrupling over the past few decades (Association of Universities and Colleges of Canada [AUCC], 2011; Maldona et al., 2013; Rose, 2012). Munro (2015) estimates that over 208,480 PhDs were awarded in 2011, doubling the number of residents with earned doctorates from a decade earlier. In 2010 alone, 5736 doctorates were awarded in Canada (Canadian Association of University Teachers, 2013), a statistic that is reflective of current annual graduation rates of approximately 6,000 doctorates (AUCC, 2011; Munro, 2015). Throughout this time, program enrolments and student demographic patterns have also changed dramatically. For instance, while enrollments in traditional programs have declined, enrolments in nontraditional, part-time and flex-time programs involving distance and/or blended learning (that minimize time-on-campus requirements) have increased (Archbald, 2011; Saliba, 2012). In the same way, increasing numbers of female, working, and mature students (often navigating professional and familial responsibilities) as well as Indigenous, minority, and international students are becoming engaged in doctoral studies (Archbald, 2011; Offerman, 2011).

These high enrolment and graduation numbers have lent to concerns about the utility and sustainability of doctoral programs, especially with respect to employability (Maldonado et al., 2013). Conservative estimates indicate that less than 25% of doctoral graduates will gain full-time, tenure-track (research or teaching) university-based appointments, leaving many graduates to pursue careers outside of the academy (Edge & Munro, 2015; Sekuler et al., 2013). Such employment shifts have exacerbated critiques of doctoral degrees as being "too narrowly specialized and lacking generic and transferable skills" (Kehm 2004, as cited in Kot & Hendel, 2012, p. 349) while at the same time adding voice to increased demands for doctoral programs that are "affordable, accessible, relevant, and accessible throughout the lifespan" (Archbald, 2011, p. 14). We enter this conversation about relevant and effective doctoral programs as a PhD graduate and a Faculty of Education Research Officer who has been facilitating research skills workshops and tutorials for doctoral students since 2005 (Ratković) and as the Joint PhD Program in Educational Studies Director, an instructor, and a mentor who has been involved in this program's development since its conception in 2000 (Woloshyn). Our scholarly, professional, and personal interests in developing and sustaining doctoral programs that are accessible, meaningful, and inspirational to diverse groups of doctoral students have strengthened our commitment to continuing such conversation at professional and scholarly levels as well as within local, national, and transnational contexts.

In this review paper, we use the Canadians for 21st Century Learning and Innovation (2016) models of learning and Yob and Crawford's (2012) definition of mentoring to explore the role of the comprehensive portfolio within a Joint PhD program in Ontario, Canada. We scrutinize the portfolio assessment and program model by focusing on the 21st century learning skills, including creativity and innovation, critical thinking, collaboration, communication, character, culture and ethical citizenship, and computer and digital technologies talent (Canadians for 21st Century Learning and Innovation, 2016). We agree with Yob and Crawford (2012), who argue that doctoral student mentoring (or what is sometimes referred to as supervision or advisement) includes guiding doctoral students "through their research, inducting them into the academic community, and often introducing them to professional networks and launching their academic career through a supportive and personal relationship" (p. 34). In this paper, we use the term mentoring in a broad sense, recognizing that many mentoring relationships can exist including those between students and their advisors, committee members, instructors, peers and important others. Firstly, we discuss the purpose of PhD education in a knowledge and innovation-based economy. Secondly, we introduce the Joint PhD Program in Educational Studies, which includes the comprehensive portfolio as a bridge between coursework and dissertation research. Thirdly, we describe the comprehensive portfolio requirements, objectives, and outcomes. Finally, we discuss the benefits, challenges, mentoring opportunities, and promotion of self-as-scholar associated with the portfolio by comparing and contrasting its objectives and intentions with the reviewed literature. We supplement this discussion with

testimonials from our doctoral students and conclude with recommendations for doctoral students, mentors, and their institutions.

Effective Doctoral Programs

In 2003, Canadian Association for Graduate Studies made a dozen of recommendations for PhD reform, urging universities to collect and disseminate data on graduation rates and completion times, encourage students to collaborate and publish, and provide ongoing professional development opportunities for supervisors. At the same time, universities are encouraged to support students through scholarships, professional development, and mentoring programs (Holley & Caldwell, 2012) to decrease attrition. According to Rose (2012), effective graduate education enhances the development of students' academic skills (i.e., research and teaching skills) and transferable skills (i.e., personal, interpersonal, and career-related skills). Similarly, Social Sciences and Humanities Research Council of Canada (SSHRC)—a government agency that promotes and funds education of social science researchers through various faculty awards and student fellowships—highlights the importance of research training that "build both academic (research and teaching) competencies and general professional skills, including knowledge mobilization, that would be transferable to a variety of settings" (SSHRC, 2014, para. 5). Specifically, graduate students should engage with foundational work in the fields of research methods and theories, research ethics, project and human resource management, leadership and teamwork, interdisciplinary research, community partnerships, digital literacy, teaching, and knowledge mobilization and dissemination.

Knowledge mobilization and dissemination has gained increased attention in the last few decades, including not only traditional academic outputs such as conference presentations, peer-reviewed journal articles, chapters, and books, but also workshops, research summaries, videos, blogs, community engagements, and intersectoral partnerships. Such focus on knowledge mobilization is in agreement with the 21st century learning model (Canadians for 21st Century Learning and Innovation, 2016), forging transferable skills (i.e., career-related competencies), such as creativity and innovation, critical thinking, collaboration, communication, character, culture and ethical citizenship, and computer and digital technologies talents. In the same vein, SSHRC (2014) urges universities to provide graduate students with international and intersectoral research opportunities as well as specific mentoring and institutional support that will enable them to gain new perspectives and knowledge while developing professional and personal networks across disciplines and geographies. Intersectoral collaboration has gained its prominence within the current landscape of PhD education and knowledge-based economy:

> On one hand, it [intersectoral collaboration] supports the development of robust academic careers (through, for example, expanded access to research resources and collaborators), while, on the other hand, it can enable effective transitions to non-academic careers. (SSHRC, 2014, para. 6)

Consistent with SSHRC recommendations, we argue that traditional educational programming for improvement and emerging educational programming for innovation are not necessarily binary opposites, but rather complementing facets of an extended, future-ready educational framework. For example, educational programming can be analytic (i.e., for improvement) and creative (i.e., for innovation) as well as logical and heuristic at the same time, promoting the development of academic and transferable skills (SSHRC, 2014). Additionally, we echo the assumption that these skills can be acquired and enhanced through ongoing practice and reflection (Canadian Association for Graduate Studies, 2008). An important question arises within this context as to how to integrate the development of academic and transferable skills into the dominant and seemingly steadfast structure of traditional doctoral programs that consist of the completion of sequenced courses, comprehensive examinations, and dissertation research. To address this question, we first discuss common characteristics of and concerns with traditional comprehensive examinations, and then explore the role of the comprehensive portfolio in the development of 21st century academic and transferable skills.

Comprehensive Examinations

The comprehensive examination is a standard requirement in the majority of PhD programs within Canada, and is considered to be a mechanism by which to ensure that doctoral students possess a broad and complete understanding of their field of study as well as methodological skills sets that mark their readiness to engage in the doctoral dissertation. The examination typically is finalized after the completion of all required coursework, with students' doctoral committees establishing the scope and parameters (in-class, take-home, essay) and format (written, oral, combination) of the examination as well as the criteria for evaluating students' responses (usually deemed as either pass or fail). Students who do not demonstrate sufficient mastery of prerequisite knowledge or skills in their initial attempts are typically provided with the opportunity to retake the entire examination, or selected elements, no more than twice (Saliba, 2012; Thyer, 2003). We argue that the comprehensive examination as described here emphasizes content-based learning over transferable skills (Rausch & Crawford, 2013) and is reflective of traditional doctoral programs developed to accommodate largely traditional students.

Over the years, faculty and students have expressed concerns about the relevancy and use of comprehensive examinations within doctoral programs. Of particular concern were questions about the capacity of such high-stakes, one-time, paper-based assessments to capture students' positionalities as scholars and professionals, as well as their learning competencies, understandings, and skills in terms of becoming (and being) future educators, mentors, researchers, leaders, and professionals with strong inter- and intrapersonal skills (Cobia et al., 2005). Similarly, comprehensive examinations also were critiqued for being faculty-centered, providing students with

little opportunities to engage in decision making processes, personal meaning making, and reflective processes (Cobia et al., 2005). Related concerns involve increased student anxiety and compromised wellbeing associated with the completion of the examination, including student avoidance and circumvention of examination (Wasley, 2008). Finally, there was concern that the use of comprehensive examinations is philosophically disconnected from the doctoral degree objectives, especially with respect to development of academic and transferable skills (Cobia et al., 2005). The question arises whether there are other processes that may be used to develop and assess doctoral students' academic and transferable skills and overall readiness to engage in doctoral research. We suggest that the use of the comprehensive portfolio provides one such mechanism within educational studies.

Comprehensive Portfolios as Alternatives to Comprehensive Examinations

Initial conceptualizations of the comprehensive portfolio as an alternative to comprehensive exams emerged almost thirty years ago and has remained popular among the professional disciplines (Elbow & Belanoff, 1986; Goertzen, McRay & Klaus, 2016; Hackmann & Price, 1995). Unlike high-stake comprehensive examinations that focus on the summative evaluation of students' academic knowledge and skills, comprehensive portfolios provide students with ongoing, formative opportunities to engage in knowledge demonstration through the completion of authentic scholarly tasks and activities that are reflective of academic knowledge and transferable skills (Cobia et al., 2005).

Engagement in the comprehensive portfolio is perceived to provide students with agency and autonomy with respect to their engagement in personally relevant scholarly activities and skills, while at the same time, promoting reflexivity of these experiences in the context of completed coursework, relevant literature, and social-cultural positioning of self-as-scholar. As students are expected to engage in the completion of portfolio-related scholarly work from the beginning of the doctoral program, it also affords them with ongoing opportunities to develop methodological skills that are required for the successful completion of the dissertation and beyond. The comprehensive portfolio also provides faculty with additional opportunities to mentor and socialize students into the academic environment (Yob & Crawford, 2014). Finally, engagement in the comprehensive portfolio provides students with unique opportunities to engage in vita and resume building activities, positioning them to enter into the competitive work environment (Cobia et al. 2005; Meadows, Dyal, & Wright, 1998). The comprehensive portfolio is a central component of our Joint PhD Program in Educational Studies (Joint PhD). We draw upon the comprehensive portfolio criteria as well as the program framework and objectives to discuss how doctoral students' academic and transferable skills can be enhanced.

The Joint PhD Program in Educational Studies

The Joint PhD is a uniquely structured doctoral program intended to meet the needs of both traditional and nontraditional students engaged in either full or part-time studies. Conceptualized at a time when doctoral studies were largely dominated by large, research-intensive universities, the program accepted its first intake of sixteen students across three fields of study (cognition and learning; educational leadership and policy studies; and social, cultural, and political contexts of education) in 2000. Today the program has approximately 140 students, with just over 100 graduates and 75% student retention rate.

The program differs from other PhD programs within the country in terms of its shared governance, academic structure, and course delivery. Briefly, the program is governed and administered by three, geographically distinct, medium-sized universities located within Ontario, Canada. As a result of its shared structure, the program provides students with extended opportunities to engage and collaborate with highly qualified faculty and peers that may otherwise not be available within a single institution. The program is intended to "foster collaboration and networking among graduate students and faculty, and facilitate partnerships that promote the growth of research activity" (Joint PhD in Educational Studies Program Handbook, 2016, p. 1). The program is also unique in terms of its delivery model, requiring students to engage in two, cohort-based, sequential summer intensive face-to-face courses co-taught by faculty from across the partner universities. The program also involves several distance courses that optimize participating faculty's scholarly and pedagogical expertise.

Student transition from coursework to the doctoral dissertation (i.e., the step from being a doctoral student to becoming a doctoral candidate and scholar) is facilitated through the comprehensive portfolio examination that allows for multiple ways of knowing, diverse learning styles, and comprehensive assessment of knowledge and skills. The portfolio encourages students to develop academic and transferable competencies and reflect on personal growth in the early stages of the program while building skills, competence, and confidence. Completion of the program is marked by the successful defense of the doctoral dissertation. We invited our doctoral students and several PhD graduates to share their perspectives of and their experiences with the comprehensive portfolio examination in terms of benefits, challenges, mentoring opportunities, and self-as-scholar identity prospects. We use testimonials from eight PhD students and one PhD graduate to illustrate similarities and differences between their comprehensive portfolio experiences and those described in the literature.

The Comprehensive Portfolio in the Joint PhD

Through the completion of the comprehensive portfolio, students reiterate their knowledge of their field of study in the context of their completed course work, engagement in authentic scholarly tasks, and dissertation topic. Working with their mentors and doctoral committees, students determine early in the program what tasks

they will complete for inclusion in the portfolio as well as how they will demonstrate associated knowledge and skills. Students also complete an overview or synthesis paper in which they form explicit connections between their academic and professional learning activities and experiences, scholarly tasks, and dissertation interests, with ongoing issues and debates within their fields of study and methodological paradigms. Finally, students engage in a public presentation and defense of their synthesis paper and scholarly tasks (i.e., comprehensive portfolio defense).

Advantages

The comprehensive portfolio advantage over the comprehensive examination has been discussed in the literature (Elbow & Belanoff, 1986; Goertzen, McRay, & Klaus, 2016; Hackmann, & Price, 1995), placing 21st century learning, mentoring, self-as-scholar positioning, and holistic approaches to doctoral education to the center of the discourse. The Joint PhD comprehensive portfolio examination embodies these central principles of doctoral education.

Enabling 21st century learning. Common scholarly tasks include extended literature reviews; theoretical, conceptual, and methodological analyses; conference proceedings and presentations; research and technical reports; educational materials; peer-reviewed publications; and creative productions that provide evidence of critical thinking and deep learning. Reflecting on the comprehensive portfolio's role in the development of critical thinking, deep learning, and transferable skills, two students noted:

> The largest benefit to a comprehensive portfolio in place of a traditional comprehensive exam is precisely the opportunity to apply 21st century skills and competencies. The comprehensive portfolio is one of the most heavily weighted reasons I chose to undertake a doctorate in Education and not Psychology! I believe myself to be a creative, system-thinker kind of person that innovates best when allowed to think "outside the box." I think that comprehensive exams provide a very narrow method of understanding and knowledge compared to the flexibility of the portfolio. So, for me, being able to create, connect, and innovate is highly valuable and personally meaningful in my doctoral journey. (Second Year Student)

> I believe that the self-reflective process of creating my portfolio allowed me to explore my experience as an emerging education scholar in depth. The flexibility in the process meant that I could express myself in very creative ways; some personal experiences transcend words. (Part-time PhD Candidate)

The above testimonials reflect the 21st century learning model focused on creativity and innovation, critical thinking, and transferable skills development.

Consistent with SSHRC (2016) recommendations and the 21st century learning models (Canadians for 21st Century Learning and Innovation, 2016), the second year student also highlighted the importance of knowledge mobilization across

educational sectors and the development of computer and digital technologies skills in her evolving scholarship. She explained:

> Technology is at the heart of my methodology, and I use it as vehicle for both data collection and knowledge translation… [As part of my comprehensive portfolio], I devised an assessment rubric in order to gauge the current status and impact of inquiry work at the [school] board…I shared my Collaborative Inquiry rubric online through Twitter, through the Ministry of Education's Managing Information for Student Achievement (www.misatoronto.ca) networks, and through the Association of Educational Researchers of Ontario (www.aero-aoce.org). (Second Year Doctoral Student)

The above testimonial reiterates the portfolio-related advantages reported in the literature (Cobia et al., 2005; MacIsaac & Jackson, 1994; Rausch & Crawford, 2013). We recognize, however, that the greatest strengths of the comprehensive portfolio might also be conceived as weaknesses. On the one hand, artefact choice and presentation flexibility are often credited as being catalysts for developing academic and transferable skills in creative, meaningful, and effective ways. On the other hand, such flexibility might be perceived as vague and ambiguous, and might present a challenge for some students.

Over the years, doctoral students have negotiated portfolio flexibility and ambiguity by using metaphors, analogies, and other frameworks to conceptualize and organize their portfolios. For instance, some students have used growth, journey, discovery, and maze metaphors to conceptualize and compile their portfolios. Others have relied on the academic pillars of research, teaching, and service to conceptualize their work, or have developed multimodal portfolios. While each of these approaches allows for student flexibility and creativity, they also may result in confusion and frustration if completed without the support and guidance of faculty mentors. For example, tailoring the portfolio to reflect the nuances of a particular metaphor might decrease students' focus on forming connections to the conceptual issues within the relevant literature. A fifth year doctoral candidate echoes these tensions:

> The strength of the Comprehensive Examination option is that you are able to demonstrate wide knowledge in your field of study. This is, of course, an area of weakness for the Comprehensive Portfolio (CP). The student and their supervisor need to be intentional about addressing this potential gap. For example, my supervisor and I designed a mini-course to reflect on key elements of my field that were NOT addressed in the CP itself. This took some time, but was very helpful. However, I believe the CP was a more effective route for the program because it directly addressed topics and issues related to my area of study, forced me to address gaps that emerged as I did my work, and provided me with an avenue for clearly communicating my growth in my program and in my research area. This gave me credibility and confidence as I completed

my portfolio documents and artifacts, and successfully defended them to my committee and the external examiner. (Fifth Year PhD Candidate)

These concerns reiterate the importance of mentoring and the positive student-mentor relationships within doctoral programs (Elgar, 2003; Holley & Caldwell, 2012; Maslov Kruzicevic, 2012; Yob & Crawford, 2012) and the importance of academic community to ward off a sense of isolation that may result as students complete coursework requirements and engage in independent study.

Mentoring

Negotiation of the comprehensive portfolio and its associated tasks (e.g., conference presentations, collaborative research projects, and publications) encourages the early development of student-mentor relationships. Students discuss the value of completing the comprehensive portfolio for maintaining professional relationships with mentors and peers:

> The preparation of a comprehensive portfolio provides valuable experience in terms of working with your advisor, and your committee, prior to undertaking your dissertation research and writing. It provides many more opportunities for mentoring than if students were just undertaking coursework. (First Year Full-time Student)

> While the comprehensive portfolio is unquestionably individual due to the uniqueness of each student's independent academic journey, the steps taken to complete many of the showcased scholarly tasks are often collaborative in nature through shared learning experiences with colleagues, in-class/online coursework, and the dissemination of knowledge via academic symposia. (Fourth Year Part-time Student)

> I felt very well supported in the process. My supervisor helped me make the most of my opportunities to build my portfolio, and my doctoral colleagues helped me reflect on those opportunities. Challenges...the portfolio marks a transition in the program in which I began to feel the isolation of doctoral studies. There were no more classes, but I was not ready to pursue my research. At times, it felt like I was in a no-man's-land ("In between before and after"). I kept in contact with my supervisor and a key doctoral colleague, but I can see where others might get lost in this in between space. (PhD Graduate)

These three testimonials are in agreement with Cobia et al. (2005) argument that the comprehensive portfolio facilitates the development of student-mentor relationships:

> Faculty and students have formal opportunities, outside of class time, for engaging in reflection and discussion about students' goals, progress toward goals, and mutual responsibilities for meeting those professional goals. Once

these types of interactions become routine, a shift may result from faculty-centered instruction and evaluation to a culture in which faculty and students are co-creators or co-instructors of meaningful learning experiences. (Cobia et al., 2005, p. 253)

In addition to illustrating the role of the comprehensive portfolio in the development of student-mentor relationships, the above testimonials also reveal the importance of the comprehensive portfolio for forging doctoral students' collaboration with doctoral committee members, peers, and other scholars in the field. Moreover, the testimonials demonstrate how the comprehensive portfolio experience can assist students in assuming more responsibility for their learning and growth:

The CP [comprehensive portfolio] defense and discussion was also very valuable. Rather than receiving feedback about a broader range of topics, the suggestions for improvement were very targeted to my area of study and my research plan, and, as a result, were very helpful as I moved forward. And the encouragements were also very valuable because they allowed me to hear how others perceived and received my work and my growth and learning. (Fifth Year Doctoral Candidate)

Such experiences of collaboration and support during the portfolio creation and defense can enhance student independence and self-directed learning skills (Cobia et al., 2005) and facilitate the development of a self-as-scholar identity in unique and powerful ways.

Self-as-Scholar

While the reviewed literature is more explicit about the need to enhance doctoral students' academic and transferable skills and increase doctoral programs' completion rates than about the need to become a scholar, the Joint PhD comprehensive portfolio's tasks, and the received testimonials, urge students to establish evidence of scholarly activities and identities. For example, in the Joint PhD program handbook it is stated that doctoral students are required to use SSHRC format for their academic vitae (Joint PhD in Educational Studies Program, 2016, p. 25). This vitae format can include evidence of scholarly activities such as presenting at refereed conferences, publishing in refereed journals, teaching undergraduate and master's courses, and supervising undergraduate and master's students. The critical role of the comprehensive portfolio defense in the process of becoming a scholar is also manifested through the change in status from doctoral student to doctoral candidate. The testimonials also illustrate the process of and the urge for becoming a scholar, emphasizing the role of the portfolio in this process:

Compiling the portfolio has been beneficial to me in a number of ways because I am an individual who had completed most of the postsecondary education in

a different cultural and educational context. First of all, it provided me with the opportunity to reflect deeply on how all my experiences within the Canadian educational context changed my academic identity. The biggest challenge I encountered was how these experiences contributed to the development of my research topic. Compiling the portfolio made me realize that the changes in my research focus had been caused by the transformations that my academic identity was undergoing. (Fifth Year Student)

The portfolio was a catalyst for seeing myself as a scholar. That may sound a bit ridiculous, a PhD student not thinking of themselves as a scholar, but as I am getting closer to the end of my journey, I now understand how different doctoral level work is compared to master's work. Compilation of the portfolio sections, and the early sketch of my research plan, planted the scholarly seeds. (Full-time Doctoral Candidate)

The idea of me "becoming" an academic was reinforced by the portfolio. It encouraged me to dig deep, to be critical, to connect the dots of my learning, and then to connect those dots to myself as an emerging scholar. In the end, I experienced the portfolio defense as a celebration of how far I had come. Now, that may be the result of a very encouraging committee (critical and encouraging), but I did feel a sense of achievement and a sense of community as a result of the process. (PhD Graduate)

According to the above testimonials, the comprehensive portfolio is a catalyst for and celebration of becoming a scholar. The comprehensive portfolio's supportive role in the process of socializing doctoral students into a scholarly community can be especially beneficial to international doctoral students who are adapting to the Canadian educational context and engaging with doctoral studies at the same time. Moreover, doctoral students recognize that becoming a scholar is only one of the multiple facets of their professional and personal growth in the program:

A comprehensive portfolio allows so much more depth and reflection—you can discuss personal challenges and how you overcame them, personal growth—it is not just about what you have learned from reading and coursework. I think that this is really important. We are not just scholars. (First Year Full-time Student)

Whatever the starting point (or background) is, the comprehensive portfolio challenges, transforms, and celebrates doctoral students' multiple identities.

Holistic Model of Doctoral Education

The comprehensive portfolio is intended to be an overarching umbrella that provides a holistic and cohesive framework for the development and refinement of academic and transferable skills across a series of activities that otherwise might be perceived as disconnected or discrete events. Several testimonials mirror the above intention:

The preparation and presentation of the comprehensive portfolio are of benefit to students in that we will also have to eventually defend our dissertation. Not only does a comprehensive portfolio ensure that we are ready to undertake our research, but it acquaints us with the committee and defense procedures. We can take what we learn from this process and apply it to our dissertation defense. (First Year Full-time Student)

The comprehensive portfolio promotes well-rounded learners by allowing students to assume numerous academic roles and observe how they intersect. In many regards, the portfolio forms the roots upon which the doctoral dissertation is constructed…Many of the scholarly tasks which ultimately become showcased in a comprehensive portfolio are interconnected with the student's chosen dissertation topic. Therefore, the subsequent transition into field research becomes a relatively seamless process as each student enters the data collection stage with broadened theoretical and pedagogical knowledge of his or her field of study and the research techniques that seek to complement it. (Fourth Year Part-time Student)

Probably the most significant benefit of the portfolio was how it enabled me to tie my program experiences together. I knew ahead of time that my course work and the products (papers/presentations/observations) I developed during the classes would become part of the portfolio. I was encouraged to be reflective throughout my courses, to consider what I was thinking about and why I was thinking about those things... An examination is an event; the portfolio is a process which really meshes well with my own view of learning. (PhD Graduate)

Similarly to the above testimonials, a fourth year part-time student revealed excitement about her comprehensive portfolio experiences and the enhancement of her diverse academic and transferable skills:

I cannot speak highly enough of the role of the comprehensive portfolio in my academic journey. This unique form of assessment extends well beyond the traditional oral examinations of doctoral candidates and aims to encourage holistic learning via the advancement of the student's pedagogical knowledge and skills using a multi-faceted approach. As a student who is currently in the final exit stages of the comprehensive portfolio, I can attest to its ability to assist learners in developing and advancing their abilities in a wide spectrum of skills, including those in teaching and assessment, researching, academic writing, scholarly publishing, and presenting [at conferences]. (Fourth Year Part-time Student)

The students' holistic understanding of the comprehensive portfolio's objectives and implications mirrors Cobia et al.'s (2005) description of portfolio as a comprehensive, flexible, competence-focused, and effective method for assessing doctoral student

learning. We argue that — in addition to allowing doctoral students to "demonstrate the level of their understanding, growth in proficiency, long-term achievement, and significant accomplishments in one or more learning areas" (Cobia et al., 2005, p. 244) — the comprehensive portfolio provides a holistic, collaborative, and career-related model of learning, teaching, and mentoring.

Challenges

Completing the comprehensive portfolio is not without challenge; however, requiring students to engage in independent learning and demonstrate time management skills akin to the timely completion of the dissertation. Students who do not demonstrate these skills, risk prolonged times to completion. There can also be "unevenness" across portfolios as students independently negotiate portfolio requirements and their personal preferences with their doctoral committee members who differ in their preferences, values, and expectations (Thyer, 2003). Additional confusion may arise as students share their unique comprehensive portfolio experiences or as they review their peers' completed portfolios. These differences may be especially confusing in absence of the public presentation and defense in which the portfolio is discussed and contextualized. Finally, completion of the comprehensive portfolio is a deeply individualized and reflective process, requiring substantial time and effort in addition to the completion of coursework. For these reasons, the comprehensive process can be demanding for either full-time or part-time students as articulated by several students:

> It took a lot of time to think about, and to create the documents, and organize the experiences that were requested. For example, as a college level instructor, I had hoped there would be university teaching opportunities to add to my resume (there was). I worried about how I'd be able to complete my coursework and write scholarly articles for publication at the same time (I did). Also, when I came into the program I certainly wasn't able to provide evidence of a deep understanding of theory related to my field of study, which was another concern (I am still learning!). This is all water under the bridge now though, and I was able to balance what was required for the comprehensive portfolio, in concert with the course work and everything else. (Full-time Doctoral Candidate)

> Comprehensive portfolios ask students to prepare a comprehensive documentation for their study; the content of the portfolio needs to cover the entire courses which they took within the past two years. It is a challenge for some of the students...If I were to do it again, I would collect each single document from the courses for the comprehensive portfolio. (Doctoral Candidate)

> There were very few sample portfolios available to review when I began. Those that I could borrow were extremely helpful. The Joint PhD program has collected portfolios for students to review online. I think that this is a great idea.

> I have provided mine for the website. I strongly support the recommendation that doctoral students attend the portfolio defense of another student(s) to prepare. This was very helpful to me. (Part-time Doctoral Candidate 1)

> I enjoyed the challenges of building the portfolio, although defending it was excruciating because I am very uncomfortable talking about myself. However, I realize, thanks to the portfolio experience, that we really do research ourselves no matter what we say our topic is. (Part-time Doctoral Candidate 2)

The advantage of the comprehensive portfolio over the comprehensive written examination has been voiced in the literature and through the testimonials. While students in the Joint PhD encounter multiple challenges in the process of developing and completing the comprehensive portfolio (e.g., unclear, uneven, or overwhelming expectations; reflection and introspection; and study-life imbalance), they also express excitement about 21st century learning, mentoring, scholarship, and networking opportunities.

Conclusions and Recommendations

Doctoral studies form the foundation for innovative technologies, processes, and ideas that further societal wellbeing, social development, and economic prosperity (Davidson, 2012). How we think, act, and live our life as scholars holds the potential to transform not only our lives, but also the lives of those around us including family, friends, students, and colleagues, with these transformations in turn building new identities, pathways, and opportunities. We agree with Davidson (2012, para. 8) who argued that higher education is "more than a rite of passage. It is an opportunity to engage in the pursuit of ideas and research that generates new knowledge, which can then be transformed into products, processes, and services. The research environment is a critical training ground for students".

In this paper, we reviewed literature, described one PhD program and its comprehensive portfolio examination, and used a limited number of student testimonials to explore the role of the comprehensive portfolio in PhD student retention, skills development, and mentoring across PhD programs and geographies. We recognize that conducting surveys, individual in-depth interviews, or focus group interviews with doctoral students and their mentors would enhance the process of collecting more systematic, accurate, and rigorous data than the data presented in this paper. In our literature review, however, we offer an overview of the current states of the affairs in doctoral education in North America, highlighting the importance of the comprehensive portfolio task in doctoral program completion, doctoral education, and knowledge-based economy.

To illustrate the comprehensive portfolio implications for students' learning, skills development, and self-as-scholar prospects, we invited our doctoral students to reflect on their portfolio experiences and included their testimonials in this paper.

While recognizing that mentors' perspectives would shed even more light on the portfolio process, we included only students' voices to fill the gap in the comprehensive portfolio literature that mostly reported on faculty and mentors' perspectives. It is important to note that testimonial submissions were not anonymous and this fact might have influenced students' responses; most responses were positive, but several important critiques (e.g., ambiguity, uneven standards, and the danger of gaining limited knowledge about foundational theories and frameworks) were reported. Furthermore, we discussed only one PhD in Educational Studies program out of 112 programs in Canada (Canadian-universities.net, 2016) to explore possible advantages, challenges, and possibilities of the comprehensive portfolio examination. While acknowledging this limited scope of the paper, we argue that returning to this 30-year long conversation — even when using only one PhD program as an illustration — might rejuvenate discussions among and between doctoral students, mentors, curriculum developers, policy makers, and international scholars and universities, transforming the lives of 21st century learners and building new pathways for doctoral education and societal wellbeing.

To enhance their PhD and comprehensive portfolio experiences — and develop academic and transferable skills for 21st century learning and innovation — doctoral students should plan and embrace collaboration with mentors, peers, and scholars in the field (e.g., through conferences and publications) as well as with local, national, and international communities (e.g., through research partnerships, knowledge translation, and knowledge mobilization). Open and ongoing communication with mentors and peers as well as focus on critical thinking, creativity, character building, culture and ethical citizenship, and digital technologies are crucial for 21st century learning and innovation (Canadians for 21st Century Learning and Innovation, 2016). Additionally, keeping a learning log from the beginning of the program, reviewing exemplary portfolios, and attending portfolio defenses can assist doctoral students in completing the comprehensive portfolio in a meaningful and timely manner. Reflecting on portfolio experiences, researching portfolio processes and outcomes, and disseminating research findings can also enable students, mentors, curriculum developers, and policymakers to increase doctoral student retention, enhance student transferable skills, and enable doctoral graduates to enter the competitive academic and non-academic work environments (Cobia et al., 2005).

It is important to note that empirical literature about doctoral programs' attrition rates — and about the role of the comprehensive portfolio in resolving this issue — is mostly written by faculty and mentors and focused on research, learning, teaching, PhD experience, and student socialization. The testimonials shared by our doctoral students in this paper offer additional insights about the value of the comprehensive portfolio, including preparation for the dissertation defense, self-as-scholar identity formation, and personal growth. To gain a deeper understanding of doctoral education and the comprehensive portfolio implications for students, institutions, and societies,

we must invite more PhD students and PhD graduates to join and expand the current conversation.

We encourage doctoral students' mentors to embrace and reimagine the comprehensive portfolio examination as an early mentoring opportunity, which is critical for successful dissertation defense, doctoral program completion (Bayley et al., 2012; Holley & Caldwell, 2012), and self-as-scholar development. Keeping an open-door policy and ongoing communication with the student and the committee members — key collaborators in this scholarly endeavor — can increase not only student retention rates, but also facilitate student socialization into the scholarly community, enabling them to enter the competitive work environment with strong academic and transferable skills and supportive professional networks (Cobia et al., 2005; SSHRC, 2016). Mentors, doctoral students, PhD programs, and universities can also benefit from mentors' engagement in comprehensive portfolio research projects that would explore the portfolio experiences of mentors, dissertation committee members, and students in relation to portfolio objectives and implications, enhancing PhD program development, doctoral education policies and processes, and student retention.

The portfolio examination has gained its prominence in 21st century learning and in doctoral education. Although perceived as an elusive and non-standardized assessment tool, the comprehensive portfolio is the major milestone leading from coursework to successful dissertation defense, offering a holistic approach to doctoral education and assessment. Although this form of assessment has been used as an alternative to the written comprehensive examination for three decades, more diverse, multimodal, and transferable skills-responsive forms of the comprehensive portfolio should be encouraged and supported across disciplines and institutions to meet the needs of 21st century learners, scholars, professionals, and leaders. Universities should foster excellence in doctoral education and transferable skills development by researching, evaluating, and adjusting their PhD programs to doctoral students' needs and to the demands of an evolving knowledge economy. Successful program completion should be a short term goal for curriculum developers, PhD program directors, policy makers, and university administrators. The long term goal must include the development of student academic, transferable, and career-related skills, especially in the current context where tenure-track academic positions within universities are limited. In Canada, more and more doctoral graduates find themselves employed in non-postsecondary sector, including management; business, finance, and administration; natural and applied sciences; education, and government (Canadian Association of Postdoctoral Scholars, 2011). Universities should also provide more scholarship and employment opportunities for doctoral students to help them keep their study-life balance and stay engaged and motivated throughout the doctoral journey. Professional development for mentors should be encouraged, valued, and provided on a regular basis.

We urge doctoral students, mentors, committee members, program developers and directors, and policymakers to develop a culture of 21st century learning, teaching, and innovation through reflection, critical thinking and creativity, collaboration, communication, character building, culture and ethical citizenship, and digital technology education. Similarly to SSHRC (2016), we emphasize the importance of knowledge creation, knowledge translation, knowledge mobilization, and intersectoral and transnational partnerships in doctoral education. Open communication about goals and expectations, reflection on learning and teaching processes, systematic assessments of teaching and learning, and assessment-informed programs, policies, and processes are critical for the success of doctoral students locally, nationally, and internationally.

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Doktorsko obrazovanje za održivu budućnost: Što sveobuhvatni portfelj ima s tim?

Sažetak

U ovom radu predstavljamo Zajednički Ph.D. Program iz obrazovnih studija koji održavaju tri sveučilišta u Ontariu, Kanada, raspravljamo o ulozi sveobuhvatnog portfelja u obrazovanju istraživača i opisujemo našu viziju održivog doktorskog obrazovanja i održive budućnosti na lokalnoj, nacionalnoj i međunarodnoj razini. Raspravljamo o važnosti sveobuhvatnog portfelja za zadržavanje studenata u doktorskim programima, razvoj vještina učenja za 21. stoljeće, mentorstvo, kompetencije pojedinca kao znanstvenika i holističko doktorsko obrazovanje. Istražili smo temeljna pitanja: Što funkcionira? Što ne funkcionira? Što nedostaje? Na kraju, zaključujemo s kritičnim razmišljanjima i preporukama na razini doktorskih studija, kao i s obzirom na interese ključnih sudionika, uključujući studente, mentore, dizajnere nastavnog plana i programa, voditelje doktorskih programa i kreatore zakona i uredbi doktorskih studija.

Ključne riječi: *doktorat u obrazovanju; holističko doktorsko obrazovanje; Kanada, mentorstvo; učenje u 21. stoljeću.*